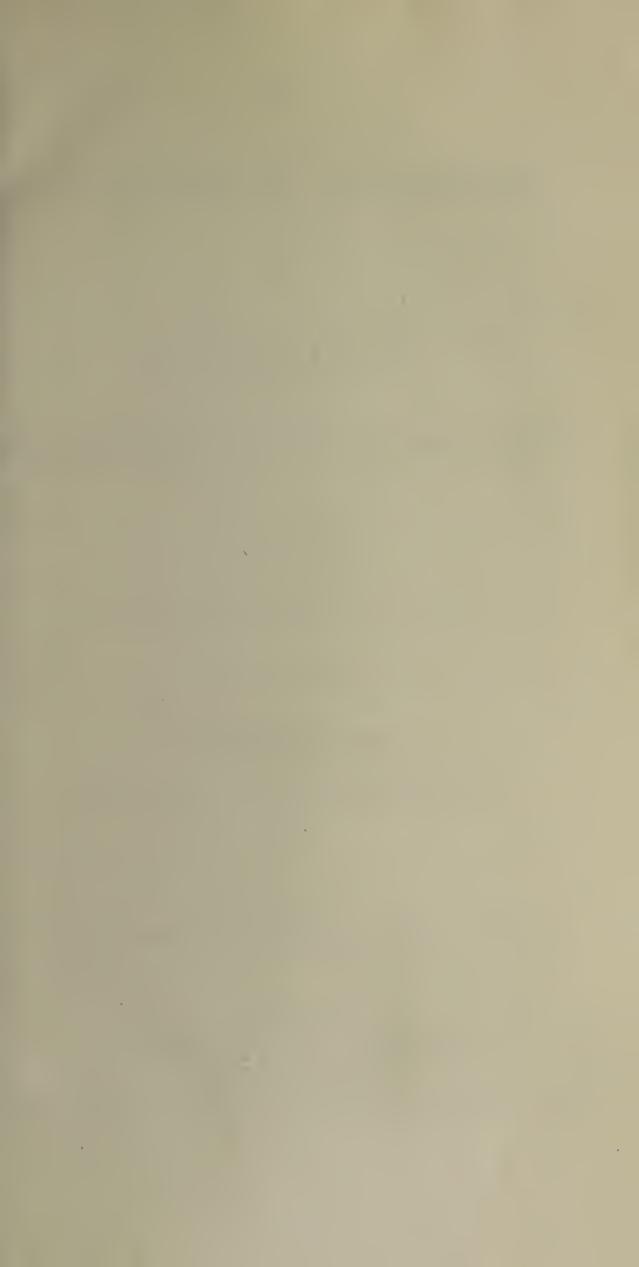# THE

QUARTERLY JOURNAL

OF

FOREIGN

MEDICINE AND SURGERY;

AND OF THE

SCIENCES CONNECTED WITH THEM.

=========

VOLUME III.

JANUARY, APRIL, JULY, OCTOBER,

1821.

———

Tros Tyriusve mihi nullo discrimine agetur.   VIRGIL.

———

CONTENTS OF VOL. III.

Nº IX.

Nº X.

CONTENTS.

CONTENTS.

N° XII.

CONTENTS.

CONTENTS.—N° IX.

ART. I. *Some Account of the Climate and Medical Topography of the West Coast of Africa.*

IN the view we shall endeavour to present of the topography of the coast of Africa as influencing the human system, our observations, although confined to that part, commonly known under the appellation of the coast of Guinea, will, nevertheless, from the general aspect and nature of the soil and seasons, be applicable to a considerable portion of country extending in both a northerly and southerly direction, from that embraced in the following Memoir. That part of the African coast to which we shall limit our description, (and which was presented to our personal observation) commences at Cape de Verde, in lat. 15° north, and 16½° west longitude, and extends first in a south-east direction, and afterwards direct east to Cape Formosa, in 4° north lat. and 5° east longitude, comprehending upwards of two thousand miles of the African shore within its range.

This part of the coast becomes interesting in many points of view. Towards each of its extremities are situated all the African settlements possessed not only by this country, but also those belonging to the Dutch and Danes. Its centre is the least known to Europeans. To the medical philosopher, the nature of its soil and climate renders it a fertile field for speculation, and its diseases a subject deserving of closer inquiry. To every one interested in the mental and moral elevation of our species it affords prospects the most humiliating and degrading. Tribes

of negroes, different in the degree of savage existence, inhabit the coast, and extend towards the interior; and although the difference of their customs and superstitions modify, in some respects, the extent of their social and moral perceptions, still they are not many degrees removed above the feræ naturæ. Tribes of Anthropophagi inhabit various places on the sea coast, and in the interior; one was seen by ourselves on the western boundary of the Ivory coast, all of them most likely descendants of the Ethiopes Anthropophagi of Ptolemy, or the savage Ethiopians described by Herodotus. A race of almost amphibious Jchthyophagi exists on the Grain coast in a state of migration, plundering the inhabitants, who are not more than a degree removed above themselves in the scale of civilization; and human sacrifice is performed by all, with the most wanton indulgence and exultation, even in those districts that have enjoyed an intercourse with Europeans for nearly three hundred years.

No account of the discoveries made by the expedition sent out by Necho king of Egypt, nor in the subsequent one undertaken by Hanno, has reached our times, sufficient for us to form an opinion of the aspect of the country, during the remote periods of antiquity. The very limited and superficial description given of the west coast of Africa by the less ancient philosophers, Ptolemy and Pliny, merely shows that the north-west extremity of this part was not unknown to them. If we may be allowed to speculate on the subject; the nature of the soil and climate, and general aspect of the country, are perhaps nearly the same at the present day, as they were at that period. If, however, they have undergone any material change, it can not be supposed to have been towards a state of amelioration. The decomposition of the superior and more exposed strata of rocks, and the continued production and decay in the vegetable kingdom, that must have been going on during the intervening ages, render it more probable that an opposite change has been the result. We are induced to conclude that an accumulation of soil has thus taken place, which every successive age would render more rich and absorbent, and consequently more exuberant in its productions. With this increase of luxuriance upon its surface, this country would necessarily become more fertile in disease.

> ———————— Macies, et nova febrium
> Terris incubuit cohors.   Hor. Book I. Ode 3.

The Portuguese navigators were the first, of the nations of modern civilization, to visit this coast, and to erect settlements. They began towards the middle of the fifteenth century to ex-

tend their voyages beyond Cape de Verde, and every successive adventurer proceeded farther than his predecessor, until, before the end of that century, the whole of this coast, was visited.

We shall commence our description of this coast, with the part first visited, and proceed along its shores to the southern limit, which we assigned ourselves in the proëmium.

The first novelty that strikes the visitor of the African coast is its extreme lowness. The earliest indication of its approach will be afforded him by the temperature of the sea diminishing considerably, even before the seaman's plummet has declared the depth of water. Its depth begins gradually to lessen, and at length the soundings are reduced to 10, or 12 fathoms; the land at last appears; the tops of trees appear to emerge out of the water, towards the eastern horizon; and in a few hours the appearance of a dense and nearly level forest indicates its nearer approach. While advancing towards the coast, or sailing in its parallel, the nights are enlivened by the constant flashes of lightning upon the land, or when at too great a distance to descry it, they are seen gleaming in constant succession towards that quarter of the horizon in which it lies.

The River Gambia flows into the Atlantic Ocean in the lat. of $13\frac{1}{2}°$ north, and 16° west long. about half way between Cape de Verde and Cape Roxo.

The general appearance of this river, from the account given by Ptolemy, seems to have been nearly the same in his time as at present. The country adjoining is low, and in most places thickly wooded. The soil is generally sandy; in low situations it approaches to a black mould, while, in the lagoons, and near the banks of the river, the constant inundations during the rainy season, and the accumulations of mud and ooze which takes place, render it extremely rich and absorbent. The banks of the Gambia swarm with musquitoes, the different species of termites, formicæ, and with all the other insects and reptiles that are generally natives of similar climates. They are particularly numerous after the termination of the rains. At that season the earth may indeed be said to teem with them, marking a soil extremely fertile in the elements requisite to the production and growth of that class of the animal creation; as well as in those principles which are productive of disease.

The settlement of St. Mary is placed near the entrance to this river, and although not so thickly wooded as most of our African settlements, yet, from the sources of disease supplied from its banks and adjoining swamps, it has been found as fatal to European constitutions. The nature of the soil and its less

dense vegetation, render at some seasons the degree of heat frequently greater than in most of the other settlements on this part of the coast; and when the sun has considerably passed the equator, towards his greatest northern declination, the thermometer in the shade has frequently indicated upwards of 100°. The rainy season commences in July, and continues about four months. During this season, but more especially about its commencement and termination, fevers of the intermittent and remittent types are very general, and frequently prove malignant. The diseases that are most prevalent are continued, remittent, and intermittent fevers, dysentery, and cholera morbus. Those are endemic at all seasons among recent visitors, if they remain sufficiently long; and also very frequently attack seasoned residenters. The fever alters its type here, as in all other places on the coast, according to the period of residence in the country, and individual circumstances of the patients.

The quantity of rain which falls throughout the year may be considered from ninety to a hundred and fifteen inches. The prevailing winds during the dry season, are the usual sea and land breezes. Tornadoes are frequent about the setting in of the rains, and at their conclusion. During their continuance the winds prevail from the W.S.W. fraught with the accumulated moisture exhaled from the equatorial Atlantic. The harmattan wind is more feeble in its effects towards this part of the country.

That part of the coast which extends from $12\frac{1}{2}°$ to 10° north lat. is particularly shelving, and in many places is elevated into dangerous shoals and sand banks. These shoals, in consequence of greater elevation in some places, assume the appearance of small islands, and lie detached at a considerable distance from the continent.

The *Rio Grande* falls into the sea in $12\frac{1}{2}$ degrees—in the place where the coast is prominently marked by a shelving character. Its mouth is almost concealed in the approach from the sea, by several considerable islands. They appear from the assimulation of their surface and degree of elevation, as if separated from the continent by the course of the river; while the aspect of their shores, and the character of the soil, render it as probable that they have been formed from the accumulating debris, washed down by the rivers during the rainy seasons from the adjoining country, as well as from the extremity of the Kong mountains, which, crossing Africa, terminate at no great distance from this part of the coast. From among this immense range of mountains, the more considerable streams, which afterwards by their increase form the majestic rivers of the Gambia, Rio

Grande, Sierra Leone, and others that present themselves along this part of the coast, derive their origin. Of the islands scattered before the mouth of this river, the most considerable and most adjacent to the continent is the island of Bulama—a name become notorious in medical controversy, from its having been the source from which many of those who espouse the doctrine of the contagious nature of the yellow fever suppose the epidemic to have been derived, which ravaged the West Indies during 1793 and following years. We shall endeavour to present our readers with a view of its topography.

Its situation, in the very entrance of the Rio Grande, gives the appearance of two distinct mouths to that river. In length it is about fifteen miles, and about ten in breadth. It presents in every direction an almost level superficies thickly wooded, and the stems of the more considerable trees surrounded by a dense underwood.

Places more devoid of the bulky vegetable productions are covered by a thick and deep grass. The soil varies from a loamy earth to a heavy clay ; and the shores assume either a sandy or muddy appearance, according as it is washed on one side, by the currents of the sea, and on the other, by the stream of the river. On the sides which in fact form part of the banks of the river, every retiring tide leaves it in some degree covered by the ooze and mud borne on its current, and there left to rapid decay in a moist and hot atmosphere. No situation could be chosen more fertile in the causes of endemic fever ; both from its peculiar position, and also from the nature of the soil and exuberant vegetation.

The situation, in the mouth of the river, renders it obnoxious to the effects of the land wind, which may naturally be expected to be fraught with the noxious exhalations produced from its banks, the adjoining lagoons, and rice grounds ; while towards the sea it is in a considerable degree sheltered from the salutary effects of the sea breeze, by the numerous and even large islands that lie without it. No one acquainted with a tropical climate, but would conclude à priori, from such a position, and from such a soil and climate as we have described, that the most severe cases of endemic fever must be the result. We cannot be surprised that the wretched individuals who attempted to settle upon this island were so afflicted ; we would have been much more astonished had any escaped. That the disease did not make its appearance among them until a considerable time after they had deserted this miasmal hot-bed, was to be expected by every one experienced in its causes. Even when most concentrated, they never we believe affect the system before the

seventh day; and in many cases a considerable number of weeks elapse before the febrile action commences.

The time which was subsequently spent by them at Sierra Leone, where many of them died, and others sickened, afforded those who escaped at Bulama, and whose minds were under the sedative effects arising from disappointment, a fresh exposure to causes not a whit less potent in producing malignant effects. Many of our enlightened brethren, who are conversant with the great length of time the miasmal poison will lie dormant in the system, operating changes in it, preparatory to bursting into actual disease, will join us in the belief, that those who sickened during their passage across the Atlantic, and by that means gave rise to the fallacious appearance of contagion, derived their disease on the African shores, by the direct operation of the endemic causes of yellow fever upon their individual systems. If there were any, who had no decided symptoms of disease until they reached the West Indies, and then were seized, we consider it very likely that the state of the atmosphere, so faithfully described by Dr. Clarke, as most prevalent throughout these islands at that time, might have brought into full action, so soon as they came within its influence, those seeds of disease which were sown in the system in Africa, and which otherwise might have never appeared, but by this superaddition of epidemic causes. If, however, this should be rejected as not being sufficiently probable, we can assign another cause, one by no means unlikely to have had effect after the mental and physical privations of such an attempt, followed by such a voyage. It is highly probable that states of the system might have been possessed by those individuals, which resisted the even highly concentrated causes of endemic fever to which they were presented in Africa; yet subsequently, when both the mind and body must have undergone some change, from the scenes in which both suffered, they surely could not be supposed proof against the more energetic causes, which are necessary to the generation of an epidemic form of the disease, and which was then commencing in the West Indies. It is by no means a fair conclusion, because several of the inhabitants of Grenada, who visited the vessel that conveyed the settlers from Bulama, were afterwards seized by this epidemic at the time it was making its appearance in the island, that therefore they were infected from that vessel. It is well known that the epidemic was then commencing, not only in the West Indies, but also throughout the United States of America; therefore it becomes infinitely more likely, that the disease in those individuals was produced by causes quite

unconnected with the Bulama settlers, and would have appeared under exactly the same circumstances if they had never visited the island. The epidemic state of the atmosphere so sensibly felt, so far as this fever extended, giving rise to a malignant modification of the disease, was materially different in character from the usual endemic of the African coast.

The fever, which proved so fatal to the Bulama settlers was the seasoning, or endemic produced by causes strictly confined to the place from which it was derived, acting upon the susceptibility of new comers, and assuming either the continued, or remittent type, according to the peculiar circumstances of the patient, but with no peculiar malignity in the disease ; whereas, the West Indian epidemic put on a much more violent aspect, affecting not only those lately arrived in that island, but also seasoned individuals and long residenters, evidently the result of causes more multiplied and intense than those by which they had been previously affected.

If the origin of both diseases be closely looked into, the former will be found derived from the products of vegetable decay, floating in a warm and moist atmosphere ; the latter combined those causes, with the extrication from an exposed surface of the more subtile elements, necessary to the constitution of a rich soil, and both were joined to a peculiar condition of the air, particularly favouring their production, as well as disposing the human system to their direct operation.

To the state of the electric fluid contained in the atmosphere, this peculiar alteration may have been owing in no inconsiderable degree ; and that such was actually the case, not only in this, but also in other epidemics, we could adduce the most convincing proofs, did we not consider ourselves as having strayed sufficiently long from the subject under consideration. From our knowledge of the African endemic we must conclude, that no proof has been ever adduced of its being capable of propagation by means of contagion, and we believe it impossible. We therefore consider the ingenious attempt of Dr. Chisholm and his followers to convey a contagious yellow fever from Africa, and propagate it at once not only throughout the West Indies, but also through America, like the fabled flight of Dædalus—one to which the solar beams are inimical.

———————— Dædaleis

Nititur pennis.——— HORACE.

After leaving the entrance of this river and passing along the coast, which takes a south-east direction, a low and swampy country every where presents itself, exhibiting the same unvaried

aspect of luxuriant vegetation. The whole distance (upwards of 200 miles), until we approach the colony of Sierra Leone, does not exhibit a single hill, or even prominence, that can serve as a land-mark to the mariner.

Within this extent many large rivers, deriving their origin from the high land forming the base of the Kong mountains, flow into the sea. The most considerable are the Rio Nunez, the Rio Pongas, and the Dembia. These rivers, during the rainy season, inundate a great part of the surrounding country.

Sierra Leone.—As we approach this river the country assumes rather a more varied aspect. The mountains of Sierra Leone, the first that have presented themselves along this extensive range of coast, overlook the river from its southern banks, while their western base is washed by the waters of the Atlantic. When viewed from the sea, the uniformly low and marshy country, seen extending in every direction, give them a more majestic appearance than their actual elevation would otherwise entitle them to. These mountains run in an easterly direction, and nearly parallel with the course of the river, for about twelve miles, without diminishing in altitude; they then terminate abruptly in low swamps, through which the Bunch river flows in a slow and muddy stream. On the side toward the sea a chain of hills extends along the coast for several miles. These mountains are covered on every side to their summits by immense forests and luxuriant vegetation.

Free Town, the British colony upon this river, is situated about six miles from its entrance, upon its south side, and is elevated from forty to seventy feet above the general rise of the river, which at this place is about ten miles across. The soil is an argillaceous earth of a red colour, covering iron clay stone, which apparently rests on syenitic rock. Unless where built upon, it is covered by majestic trees, and a vast profusion of shrubs and grass. Among these, the wild cotton tree (bombax ceiba), the palm tree (carica papaya), the cocoa tree (cocos nucifera), &c. hold a conspicuous place. The swamps, so abundant at the foot of the mountains, and along the banks of the Bunch, which falls into it about seven miles from the colony, are covered by an impenetrable vegetation, chiefly consisting of mangrove bushes (rhizophera mangle) ; which, by the very extensive manner they propagate themselves in all wet situations (by shoots thrown off from their upper branches), form impervious tracts ; and are so intricately wove together as to defy eradication by the most powerful means. They cover the banks of these, and indeed all the African rivers ; and, by furnishing a natural barrier, preserve them in the same channels. They also

contribute most powerfully in rendering such situations the certain source of disease, by retaining the mud and ooze, and other matters conveyed by the river, among their entangled branches. The country to the north and east of Sierra Leone is inhabited by the extensive native States of Timmances and Benna Soosoos, and on the north by the Bulams.

No situation on the African coast could have been more unfavourably chosen for European constitutions than the one now under consideration : an abundant supply of good water is the only circumstance we can adduce in its favour. On the south and south-west, the colony is overhung by the mountains already mentioned, the only range that arrests the eye of the voyager for upwards of 1,000 miles in either direction along the coast. These, with undivided attraction, arrest and condense at all seasons of the year the moisture exhaled, not only from the Atlantic Ocean, but at the same time from the very absorbent soil, and the numerous marshes and rivers that surround them in every direction. Hence, in opposition to a well known law in the science of climate, " that the number of days of rain diminish as we approach the equator, while the quantity of rain that annually falls increases." The actual number of days in which rain falls is greater than in most northern climates. By a register kept at this colony, the number of rainy days amounted to 204 ; and of the remaining dry days, although the moisture in the atmosphere was not actually condensed into rain, yet the greater proportion of them exhibited its progress towards that state ; not only the adjoining mountains, but the river and its banks being covered by fogs and haze. Indeed few days occur throughout the year, which afford a clear view of the mountain tops : clouds are seen generally either covering their heads, or resting upon their sides, at different degrees of altitude.

The rainy season commences in June, and terminates with October, and is both introduced and closed by tornadoes. Their number, by an account kept, during one whole year amounted to fifty-four ; no part being more obnoxious to them than this and the grain coasts. The quantity of rain during the year may vary from one hundred to 120 inches. We cannot suppose it often to fall short of the former. Thunder and lightning are of frequent occurrence here, as they also are along the whole coast ; the former, by the loud reverberation from the sides of the mountains, becomes doubly tremendous. The winds during the rains generally blow from the S.W. or W.S.W. About their commencement, and after their conclusion, the atmosphere is generally tranquil. At other seasons the sea and land winds occur, but not in regular succession. The sea breeze seldom

appears, and when it does, it generally dies away in a few hours, leaving the air sultry and stagnant. The land winds come on about sun set, and only amount to very light breezes ; and, from blowing over the adjoining rivers and swamps, are generally a source of disease, especially to such vessels as may lie in the river within their noxious influence. The harmattan is less frequently and more feebly felt here than on the Gold coast.

The temperature of the air at Sierra Leone is generally not greater than 95°, but its tranquil state, in regard to its horizontal motion, favours the concentration and multiplication of the foreign ingredients, derived from the soil and decaying vegetation ; consequently, the atmosphere in this state feels very sultry and oppressive. The mean temperature obtained from the degree of heat observed at different periods of the day throughout the year, was from 83° to $83\frac{1}{2}°$. The hypothetical scale laid down by Professor Lesslie, * from the empirical law discovered by Professor Mayer of Gottingen, gives for the same latitude 83-2°. The harmony here observable in conclusions from data so different, is not a little surprizing.

The diseases which the medical philosopher would be led to expect, resulting from the operation of this climate upon European constitutions, are exactly those which are constantly presenting themselves. They are, however, considerably modified in many of their phenomena by the period of residence, and circumstances peculiar to the patient. Accordingly, continued and remittent fevers (commonly called yellow fever), intermittents, dysentery, cholera morbus, enlargements of the spleen, and chronic inflammation of the liver,—are the diseases of most frequent occurrence, and generally prove annually fatal to about one-third of the white population. Of those who die, about eight-tenths are carried off by fever, the type of which varies according to the period of residence and the constitution of the individual ; but whatever aspect it may assume, it derives its origin from the same causes. An occurrence took place here, which affords the most convincing proof of the correctness of our position :—Nine sailors direct from England, and belonging to the vessel in which we were, all of them having previously been either on this coast or in the West Indies, were put into a boat to convey our party to the colony, the vessel being becalmed at a considerable distance from the entrance of the river. Of those nine individuals, five had had yellow fever on either the African or American coast.

---

* Article, Climate.—Supplement to Encyclo. Britan.

The season of our arrival was in the end of June: the periodical rains had just commenced. The day was far advanced before we landed at Free Town, and the overcast sky that had succeeded a cloudless morning, was pouring down its rain in torrents. The men were detained under shelter till the evening, when the weather appearing more favourable, they were allowed to return to the vessel. On their way they were overtaken by a tornado, which drove them upon the north and more swampy bank of the river. There they remained in their drenched clothes, inhaling the miasma disengaged from this productive source until next morning, when they reached the vessel. These were the only individuals composing the ship's crew that had any intercourse with the land, and in them the effects of this exposure were soon expected to follow. About ten days after this occurrence the first man sickened, and within three weeks eight out of the nine had fever, under various forms. The vessel only remained nine days at Sierra Leone, and consequently was beyond the influence of the common causes of disease in that climate, before any one was taken ill. Of the four who had never before been in a warm climate, three had the disease in the continued, and most concentrated type, the other in the remittent form. Of the five who, at a former period of their lives, had suffered from the same disease, three had it now in the remittent form, one a regular tertian, and the fifth had no disease at the end of two months.* These eight men were treated according to the type of fever, and prominent symptoms which were developed in the course of the disease. They all recovered; but they were, during the treatment, completely removed from the causes from which the disease originated.

After passing Sierra Leone, the country appears studded by hills, covered with wood to their summits. As we approach the Bay of Sherbro' they gradually diminish in elevation, and soon entirely disappear. From Sierra Leone to Sherbro', the distance is about eighty miles; within this extent four considerable rivers fall into the sea. This bay is formed by a range of low islands, whose south-east extremity touches the continent, and leaves it in an oblique direction, thus presenting a capacious opening towards the north-west. The country, so far as it can be viewed in either direction, is low and swampy; and although a fine

---

* We afterwards understood from the captain of the vessel—that, at a period of between three and four weeks subsequently, this man died after five days illness; but they were then lying within the influence of the usual causes of the disease.

sandy beach is seen edging the land, yet the soil is of a deep and heavy clay. Upon passing the large, but low, island of Sherbro, (one of the range just mentioned) and for upwards of seventy miles, the country is uniformly low and swampy, and much intersected with rivers, until we arrive at Cape Mount. This nearly conical mountain is situated on the south side of a spacious river, bearing the same name. As we advance along the coast, the elevation, so abruptly assumed on the south bank of this river, gradually diminishes; and within the space of a few miles the characteristic feature of lowness is again presented to our view. The country is every where thickly wooded. Proceeding from Cape Mount, along nearly a straight shore, Cape Mezurada, an elevated head-land, appears. The latter is about fifty miles distance from the former, and like it forms the southern barrier to a large river, which bears the same name usually given to the Cape. These rivers inundate most of the country during the rainy season.

The *Grain Coast* commences at this river (Mezurado), which is situated in 6. 30° north lat. and 10° west long., and terminates at Cape Palmas, in 4° north lat. and 7. 20° west. This coast runs between these limits in an even direction, without affording the least variety of appearance. Not a prominence is seen throughout. A dense forest covers an uniformly low land, through which a great number of small streams flow with a sluggish course. None of them are large enough to be dignified by the name of a river; nor can they admit of navigation, but by the small canoes of the natives. The coast is every where shelving, and the immense swell, especially during the rainy season, that rolls in from the Atlantic, renders this unsheltered shore generally impracticable to all, but the almost amphibious negroes. Their villages are built upon the sea side, near the swampy mouths of those rivulets; affording them a greater facility of obtaining subsistence from both elements. The soil is a deep, rich, and heavy earth, no where leaving a stone or rock exposed. This immense plain, during the rainy season, is almost one entire morass; hence rice is generally cultivated, and forms the chief food of the inhabitants. While viewing the land at a distance of two or three miles, the slow and successive billows are heard breaking, with a continued roar, upon the extended and narrow beach; and the continued line of foaming surf separates like a zone that tumultuous element from the compact and variously shaded productions of the soil, which form one immense forest, as far as the view can extend. Occasionally, one or more trees are seen greatly elevated above the rest, forming the most striking land-mark, by which seamen may recognize the different

parts of this coast. Places designed for the growth of any of the farinaceous grasses or roots, usually cultivated in this country, have, towards the end of the dry season, their exuberant, but now withered, productions set on fire; and with little farther preparation the seeds are put into the ground. The quantity of rain during the year is nearly the same as on that part of the coast already described. This season commences with June, and continues about four months, attended with almost continued thunder and lightning. The wind during this time generally blows from the south-west. To this season succeeds about a month of continued fogs, with an almost tranquil state of the atmosphere, arising from the exhalation of the moisture from the absorbent soil. Although during these fogs the actual rise of temperature is inconsiderable, yet this is constantly the most noxious season of the year; and were it not, that the almost daily occurrence of tornadoes carry before them the rapidly disengaged malaria in their tumultuous sweep, this part of the coast would be uninhabitable to the nobler class of animals. As it is—they exhibit in all their species, the lowest varieties of formation.

Ivory Coast.—At Cape Palmas we enter upon the Ivory coast, which runs E.N.E. to Cape Lahou, in 5° north lat. and 4° west long., where it terminates. This part, like the Grain coast, is throughout its greater extent low and swampy; where it approaches the Gold coast, the country in many places assumes the appearance of a low table land. The quantity of rain and prevailing winds, and degrees of temperature, is nearly the same in this district of the country as in the last described. Indeed, the whole extent of coast from the Bay of Sherbro' to Cape Lahou, embracing about 700 miles, possesses an uniform character in the soil and seasons, and in the luxuriance of the vegetable kingdom. An everlasting sameness in the face of the country reigns throughout; and, with a single exception, not a mountain, or hill, presents itself as far as the sight can reach towards the interior. The uniformly low surface is frequently intersected by small rivulets, but it no where presents any considerable or navigable rivers. Places devoid of the more majestic vegetable production are completely covered by mangroves and brambles, through which, paths between the native towns, and from them to their cultivated fields, are with difficulty formed; or even kept open. Those luxuriant natives of the soil extend to the very edge of the sandy beach, scarcely a rock being exposed. Where, however, the violence of the surf has succeeded in removing the deep clay soil, rocks of the primary

formation are met with. Granite, micaceous schistus, and clay slate, have been thus in various places exposed.

The Gold Coast.—After passing Cape Lahou, we enter upon the Gold Coast. It derives this appellation from the gold obtained by washing the alluvial soil. It extends in almost the same directions with the former, running nearly east, in the lat. of 5° north, until it reaches the Rio Volta in 2° east longitude, where it terminates ; thus embracing an extent of 300 miles.

This district of country assumes a more favourable aspect, than any other upon the western side of Africa. The natural wealth of the country, the more varied soil, and the situation it enjoys, in respect of proximity to the interior kingdoms of this extensive quarter of the Globe, render it better calculated, than any other we have visited, for European trade and colonization. To the voyager accustomed to view the dull uniformity displayed by the Grain and Ivory coasts, this exhibits more attractions. The great variety of scenery and the regular succession of low hills, that present themselves as we advance, with occasional rocky prominences, running into the sea, afford more striking prospects than before presented. This is also enlivened by the appearance at distant intervals, of the seats of small but civilized societies, forming the different European settlements, that are met with on the African coast. There are, however, many striking disadvantages under which it labours, and indeed in common, with the greater part previously described.

The want of navigable rivers, and the unprotected nature of the shore, from the deficiency of creeks and harbours, are alone great detriments to mercantile intercourse. In many situations in this particular district, the scarcity of good water during the dry season, is a matter of serious inconvenience, and even a source of disease.

The native inhabitants are more numerous, and their circumstances considerably superior to the other Negroe tribes, who had hitherto fallen under our observation.

Apollonia is the first European settlement we meet with upon this coast. It belongs to the British African Company, and is situated in an extensive plain, in $2\frac{1}{2}$° west lat. In most places it is thickly wooded, but in others subjected to the cultivation of rice. It is intersected by small rivers, that inundate the greater part of the country during the rainy season. The soil is a deep loamy clay. The plain terminates in low hills as we advance towards the interior of the country. Between these and the settlement is situated a fine lake of about seven or eight miles circumference, its banks are marshy, and even during the dry season cannot fail of loading the land winds with miasms ;

with which, indeed, the surrounding country, from its low and wet soil, and exuberant vegetation, must abound, through the greater part of the year. As we proceed up the country, large open prairies, or meadows of long rank grass, are frequently met with, in which elephants are found browsing even within a very few miles of the sea shore. This place is fruitful in the usual endemic diseases of tropical climates.

After leaving Apollonia, the coast is more hilly and varied in its appearnce, and generally densely wooded, excepting the small patches of cultivated ground, required to raise sustenance for the inhabitants. *Axim,* a small fort belonging to the Dutch, standing upon one of the promontories, forming Cape Three Points, next presents itself. The soil here is a deep and fine red earth, in the lower strata; towards the surface it is more loose and sandy. The surrounding country is every where covered by a thick vegetation. After quitting this place we arrive at *Hollandia,* once a considerable fort belonging to the Dutch, but now deserted. It is situated upon the sea side, as are all the European settlements on this coast. The appearance of the country is nearly the same with the part already mentioned.

Dixcove, a British fort, is built upon an elevated prominence, forming the boundary of a large creek, in 1.30° west long. The country adjoining is hilly, and nearly impenetrably covered by large trees and bushes. The soil is generally a deep tenacious fine clay, leaving no where a rock in sight, unless upon the sea side. The limited view afforded, led us to suppose them entirely of the primitive formation; quartoze and syenitic blocks being thrown upon the beach by the immense surf. The mouth of this creek is greatly obstructed by coral reefs.

This small fort is picturesquely situated, overlooking the small bay and negroe town on the one side, and on the other the extended ocean, while the adjoining country exhibits a mass of verdure in various tints ; and from the abrupt elevation of immense trees, amidst the other comparatively dwarfish productions of the soil, a diversified light and shade are produced, new to those recently arrived in a tropical country.

Succondee is the next place deserving of observation. Here the British and Dutch have settlements. The Dutch fort is erected upon a prominence of micaceous rock of considerable elevation, forming the eastern boundary of a spacious bay. The British settlement stands at a short distance from the head of this bay in a low and marshy situation. The soil in most parts is a deep and fine absorbent clay ; in others, a dark and rich earth ; and with the exception of cultivated patches, that are uncommonly fertile, the country is quite uncleared of its luxu-

riant productions. Insects and reptiles, usually found in hot climates in all very moist soils, are very abundant. The very absorbent nature of the soil along the whole of this part of the country, and its moist state during a greater portion of the year, render this place productive of fevers and diseases of the secreting organs.

In our progress towards the eastern part of this coast, we arrive at Commenda, an English fort. It is placed in a low marshy situation, but the country towards the interior is more elevated. The soil is either wet and swampy, or of a deep and loamy clay.

St. George del Mina is the chief settlement belonging to Holland, and the seat of their African Government. It is the best fortress upon the coast, and is situated on a small peninsula, formed by an inconsiderable river running obliquely into the sea. The immediate vicinity of this fortification and adjoining town is better cultivated than any part upon the coast ; even here the Dutch have in some degree pursued their favourite recreation of horticulture. The surrounding country is level and profusely covered by the usual vegetable productions. The soil is in some places of a light earth, covering a deep heavy and tenacious clay ; in other places it is a deep clay throughout, of nearly the same kind as is usually met with on this coast. The adjoining native town is populous, and its inhabitants even wealthy.

Cape Coast Castle, the principal settlement belonging to this country, stands upon a very low and insignificant prominence of granite and quartz rocks. The native town is placed near the walls of the castle, between it and the adjoining country. This town is built of the tenacious and heavy clay, which forms the soil on which it stands, and the houses are so closely placed to each other, as scarcely to allow a passage between them ; during the rainy season every house appears placed in a mire of clay and mud.

In every considerable vacancy, and on the grounds immediately surrounding the town, accumulations of every species of filth would soon take place, did not the moist and warm atmosphere promote its decomposition and carry off the volatilized products, while insects, reptiles, and birds, assist in furthering the same effect. The soil is rather various, in some places it is a rich black earth, in others, a brown heavy clay, interspersed by small fragments of mica and quartz ; but in all places it is uncommonly deep, and exuberant in its wild productions ; from which, with exception of the patches of corn or rice fields under cultivation, it is completely uncleared. There is no river in the vicinity, and consequently the supply of good water is very deficient

during the dry season. It then abounds with animalculæ and the noxious gases, disengaged in the low and marshy ravines, from which it is generally obtained.

In our eastern progress along the coast, the next place of importance, to which we will turn our attention, is *Anamaboo*, a fort belonging to this country. It stands upon the sea side, in a very low situation, with a large native town between it and the neighbouring country, which is hilly and covered with clumps of majestic trees, every where surrounded by a dense underwood. The soil does not differ from that we have already mentioned. In travelling along this part of the coast several other forts and settlements, belonging both to this country, to the Danes, and the Dutch, present themselves; some have been relinquished since the abolition of the slave trade, but all of them are similarly situated with those we have already mentioned, and the soil and aspect of the country continue the same until we arrive at Accrah, in 1° east longitude.

The Accrah Country, in which the English, Dutch, and Danes have settlements, is one most extensive and beautiful plain. As far as the sight can reach, not a hill can be seen, unless in days of unusual clearness, very distant mountains may be descried in the interior of the country. This very extensive plain may be considered as one immense meadow of long grass, with occasional picturesque clumps of trees. The unincumbered state of the soil, as well as its peculiar nature, are favourable to cultivation, and the health of both natives and Europeans. The alluvial earth, through the whole of this country, and for nearly 100 miles eastward, varies from almost a pure sand to a sandy mould, resting upon horizontal strata of primary sandstone, and allowing the rains to percolate and flow along the inferior layers. Owing to this, and the open state of the country, agriculture is more attended to; and endemic diseases, that abound in all the countries we have hitherto described, more seldom occur here. This comparative salubrity of climate induces convalescents from the neighbouring settlements to resort to this place; and the advantages they obtain are most striking. Nor is the different effects of these climates confined to the human species; many of the more perfect animals, such as horses, dogs, &c. which either cannot live for a short time, or enjoy a sickly existence on most parts of this coast, are abundant in this district of country. From the nature of the soil permitting the moisture to find a ready passage through its strata, the sun's rays produce a higher degree of temperature on its surface, and consequently the sea and land breezes blow in more regular succes-

sion. The former is more refreshing, while the latter is infinitely less fraught with the noxious gases.

The greater extent of the Gold coast, with the exception of the beautiful country of Accrah, is of a deep and rich clay soil, covered by an exuberant vegetation and lofty forests. The different European settlements scattered along its margin, are generally erected and retained without regard to salubrity. This is particularly the case with those belonging to this country; most of them being placed in low situtions, and either surrounded by, or in the immediate vicinity of, the most fertile sources of malaria. Every breeze must waft it into the apartments of the susceptible tenant. The great depth of the absorbent soil, and its dense verdure and impenetrable underwood, absorb the greater part of the periodical rains; little of it finds its way to the sea, hence the paucity of rivers along this part of the coast. The rains commence in May, and terminate about the beginning of August. They are afterwards quickly evaporated by a vertical sun from the retentive soil, conveying the gases generated from it and the decaying vegetables. This is very sensibly evinced by a month's continuance of fogs and haze, which always follow this season. The moisture and gases thus produced from the soil, in conjunction with that obtained from the neighbouring ocean, are again precipitated, and constitute what is called the after rains, which fall about the end of September and in October. The quantity of rain during the year is from 80 to 100 inches. The wind during the first rains always blows from the sea. During the foggy season the air is generally tranquil, owing to the copious evaporation from the earth's surface, after its almost deluged state. This condition of the atmosphere favours the concentration of the noxious elements given off by the soil, &c. and renders it more sultry and oppressive, than is indicated by the actual rise of temperature. It's mean through the whole year does not exceed $83\frac{1}{2}°$, generally ranging from 72 to 96°. The barometer does not vary above one-eighth of an inch on either side of 30°.

During the dry season the sea and land breezes are regular; and on this part of the coast the harmattan, or dry east wind is of frequent occurence in this season. It's beneficial influence in promoting recovery from all the diseases experienced in this country is always remarkable; nor are its effects confined to promoting recovery, or invigorating the debilitated; epidemics are arrested in the midst of their progress, and even the virus of small-pox will not begin to act upon the system, during its continuance, and if already commenced, the progress will always be favourable.

Throughout the greater part of this district of the African coast, vegetable productions form their chief source of subsistence. But animal food, although not abundantly supplied them, is still within the reach of the more wealthy, especially in the northern countries embraced by this sketch, and in the richer kingdoms of Akim, Dahomey and Ayo, that are situated inland, from the eastern extremity of the Gold coast. The surface of the soil may be considered, generally speaking, as entirely uncultivated. The preparation it receives can scarcely deserve the name of cultivation, nevertheless it seldom fails in producing abundantly from the seeds committed to it; as, however, they only subject to culture what they consider sufficient for their sustenance until the return of the season, a scarcity occasionally happens. This is always the effect of a shorter or longer duration of the rains, and consequently gives rise only to a partial failure in their crops. According to the soil and situation, they cultivate rice, millet, maize (zea mays), yams (dioscorea bulbifera), plantains (musa sapientum), sweet potatoes (convolvulus batatas), sweet or innocuous cassada (jatropha janipha); the poisonous species (I. manihot) is also cultivated, and is employed in sauces with the capsicum annuum, or C. frutescens, or also with the amomum grana paradisii; during the boiling it undergoes in the process, it loses its noxious qualities. Ground nuts (arachis hypogea) form another considerable article of food; these grow near the extremity of the root of the plant. In addition to those, we may enumerate the following fruits that are abundant:—ananas (bromelia bananas), bananas (musa paradisaica), cocoa nuts (cocoa nucifera), guayavas (guayava psidium), papaws (carica papaya), water melons (anguria trilobata), limes (citrus medica), and several species of the tamarind.

After passing along the champaign and open country of Accrah, we arrive at the similarly situated settlements of Prampram and Ningo. The soil on this part of the coast is light and sandy, and generally open and well cultivated. Game may be had in tolerable abundance; deer, hares, partridges, guinea-fowls being seen in great numbers. Domestic animals are also much more abundant in this part of the coast. From Ningo a few miles bring us to the Rio Volta, a large river, at the entrance of which the Danes have a fort. Although capacious at the entrance, and so far as it has been navigated, apparently of considerable magnitude, yet the numerous sand banks and rocks at its mouth render it of dangerous navigation. This, as the rest of the large rivers on this part of the coast, abound with crocodiles and hippopotami. The coast to the eastward of this river (frequently received the appellation of the Slave coast), for many

miles retains nearly the same species of soil with that just mentioned. This country formerly possessed two settlements on this part of the coast, in the dominions of the king of Dahomey; they were relinquished after the abolition of the slave trade.

The Slave Coast commences at Rio Volta, and extends to the Bay of Biafra, in lat. 3° north and $7\frac{1}{2}$° east longitude. The whole of this coast is remarkably low and swampy, and deeply indented by creeks, and the capacious but often shoally mouths of the large rivers that flow into this part of the Gulf of Guinea. The most remarkable of these are the Formosa, old and new Calabar, and the Cross and del Rey rivers. According to Reichard, these are different mouths of the Niger, by which it disembogues itself into the Atlantic. These rivers flow through the extensive kingdoms of Benin, Warree and Biafra, and are navigable to a considerable distance from their entrance. Owing to the extensive traffic carried on with the different States in their vicinity, in palm oil, ivory and ebony, &c. given in exchange for British manufactures; and to the facilities which they afford to the native traders from the more inland States, for the transport of their commodities, these rivers are more frequented than any on this coast. Their banks, however, are so swampy, and the soil in general so richly wooded, as to render commercial speculation an undertaking of surprising enterprise on the part of Europeans, constituting the crews of vessels proceeding to this country. We believe half of those who proceed on such a voyage never return; and we have known instances of one fourth only surviving their short stay in this climate. The necessity for vessels proceeding some distance up these rivers, in order to enter upon the field of traffic, necessarily brings them within the sphere of action of the malaria, generated from the mud, ooze, and decaying vegetables, which continually cover their banks. These sources of disease are greatly multiplied, both during and after the rainy season, from the nearly inundated state of the country, and by the sultry and stagnant state of the atmosphere. The diseases which prove so fatal to the crews of vessels, (who are the only visitors of this country) are continued and remittent fevers, dysentery, and cholera morbus. The unhappy victim of disease may consider himself so far fortunate, if he escape with an attack of one of these only; not unfrequently dysentery carries off the individual whom fever had spared. The soil in this part of the coast is generally a muddy clay. The district that adjoins the Gold coast, and forms a part of the kingdom of Dahomey, is more open; and the soil is generally sandy, or varying from that to a gravelly clay. The quantity of rain, and the rise of temperature, may be considered

the same here as in the countries previously described. The sea breezes are neither so strong nor so regular in succession on this part of the coast as in most of its divisions, already mentioned.

From the account we have attempted to give of this part of the African coast, our readers must be struck by the sameness of aspect, which the whole of it affords. This, as may naturally be supposed, gives rise to a similar uniformity in the character of the diseases to which Europeans, either lately arrived, or for a considerable time resident in it, are subject. These, as may be expected, vary according to the time of residence, the intensity of the causes, and individual circumstances of the patient.

We shall conclude this article with a few brief observations on the more fatal diseases of the country—fevers and dysentery. Those who arrive in this country are subject, within the first nine months, and more frequently within as many weeks, to the endemic yellow fever, to bilious diarrhœa, to cholera morbus, and dysentery. If a bilious diarrhœa or cholera precede an attack of fever in the new comer (or what is usually called the seasoning), of a tolerably sound constitution, both diseases may be comparatively mild.

Fever is the disease which produces the greatest degree of mortality, and may attack new comers at all periods of the year. Nor do residenters remain long without suffering from its visits, although under a different type. When unacclimatés, of a phlegmatic or melancholic temperament, are subjected to the causes of the disease in considerable concentration, the vital energy may be so completely overwhelmed as to be incapable of re-action, and none of the symptoms of that stage of the disease can be discernable. In such cases the frame of the subject, in the space of from one to five days, sinks into dissolution, exhibiting a liquescent form of fever ; the body being semi-putrescent, even before vitality has entirely relinquished her seat. In those of a full habit, of a strong muscular formation, or of the sanguine or irritable temperaments, violent symptoms of re-action rapidly supervene to those which indicated the stage of invasion ; these, if not arrested by judicious treatment, exhaust the vital energy in a period proportionately to their degree of intensity, and the resistance made by the constitution. This consequent exhaustion may be so great as to be incompatible with the continuance of life ; or some important organ may, during the heighth of the excitement, suffer in such a manner as to put a speedy stop to the vital relations of the system. Either of these effects may individually operate in producing death, or they may

combine in being its more immediate cause. In long residenters
the fevers that terminate fatally are generally of a remittent
type; in them, the changes wrought upon the system, previous to
the last and grand change, are seldom so simple; along with
considerable exhaustion of the vital energy, there is always
present considerable visceral disease. Intermittents are common
among the acclimatés, and often induce visceral disease.

Dysentery is more frequent upon the Gold coast than on any
other part. This may be owing to the scarcity of good water.
The mode of living has also a considerable share in giving rise
to this disease. In new comers it is chiefly confined to the
mucous membrane of the colon and rectum, with increased
action of the muscular fibres, especially the longitudinal fasci-
culi; these contract the colon into cells, and from being consider-
ably shorter than the intestines, even in the healthy state, this
viscus is drawn into folds that meet those of the opposite side;
thus forming complete valves against the farther progress of the
contents, or of the matters thrown into this by the small intes-
tines.*

In unacclimatés this disease is more acute, and generally re-
quires depletion, with medicines calculated to allay the irritation
and spasm, constituting some of the leading symptoms of the
disease. Irritating purgatives, &c. only tend to prolong the
disease. In long residenters it is generally combined with con-
siderable disease in the liver and spleen, and then not unfre-
quently assumes the chronic form; such a complication will
consequently point out the treatment. Our limits prevent us
from taking a view of the other but less prevalent diseases.

Among the natives fever seldom appears; they are not, how-

* We have met with the pure idiopathic cases of this disease, in which no de-
rangement was visible in the liver. We consider the exclusive manner of treating
dysentery with mercury, recommended by many, as evincing narrow views of
pathology, inasmuch as it attributes its origin to diseased secretion of the liver.
We do not doubt, that both diseases may take place simultaneously, or the one
supervene on the other; and thus both may be prolonged or exalted, either indivi-
dually or conjunctly. Of this we have seen proofs, established by post mortem inspec-
tion. We also disagree with those, especially our continental brethren, who con-
sider dysentery as a colonitis. That there is inflammation of the mucous membrane
of this intestine, frequently extending along the rectum on one side, and to the
small intestines on the other, we grant; but there are also an irritable state and
spasmodic action existing in the muscular fibres, and were inflammation also exist-
ing in them, these, in our opinion, could not take place. The inflammation no
doubt extends to the cellular tissue connecting both coats, and in its progress in
this connecting membrane detaches the mucous tissue.

ever, exempt from its attack. It generally assumes an ephe-meral form, and is frequently complained of according to the organ chiefly affected, as when the head, stomach, or bowels become considerably deranged through the course of the febrile action. Fever however sometimes commences, and runs through the regular stages, without any particular organ suffering the onus of disease ; but the different stages are always of shorter duration in them than in Europeans ; and the action of the heart becomes more rapidly increased. During the course of the excitement, it more frequently is the case that some parti-cular organ or tissue suffers in such a manner as to arrest the attention of both patient and physician to that alone. Dysen-tery is of frequent occurrence among them, and often assumes an epidemic character.

During the course of this hasty sketch, our readers cannot fail of perceiving from the nature of the soil and its productions, from the topography and climate of the country, that it must be productive of the sources of these endemic diseases.

To trace the effects of those causes upon the frame—to in-quire by experiment and observation into the series of causes and effects, as they are sensibly developed in the system, as well as into their primary mode of action—were the objects that chiefly led us to encounter a climate, in which no one could be placed a night without danger. These inquiries will be soon laid before our brethren : we have only to regret, that no faci-lities were afforded us for extending them as we could have wished ; but, notwithstanding, we have some reason to be satis-fied with the result.

ART. II.   *Some Account of the New Views of the Animal King-dom, which have lately arisen in the French School of Natural History.*

THAT motley crowd, the public, have of late years been loudly clamorous against the instability of science, and with some shew of reason ; for scarcely has a man finished his attendance upon his first course of chemistry, and, the better to impress his knowledge on his mind, copied out with his own hand a tabular classification of all the substances in nature, simple and compound, or at most had a month's enjoyment of the consciousness of being a well informed general inquirer, than there steps out from the opposite and less numerous group, a man with a new discovery,

which, though in itself perhaps minute and scarcely worth the
general inquirer's notice, is soon found to lead to other disco-
veries, with which the old classification can by no means be
brought to tally, so that a great part of it must be wrought over
again, and the memory subjected to another considerable load
of new nomenclature. This necessity for alteration occuring
frequently, and sometimes embracing a very considerable branch
of chemical science, does not at all accord with the side glance,
which is all that general inquirers can usually bestow upon a
species of knowledge, perhaps widely separated in all its bearings
from their ordinary pursuits and their common trains of thought.
These revolutions become fatiguing and perplexing. They
produce first of all a loud complaint against scientific system-
builders, and soon end in an utter loathing at the affectation of
giving out as almost finished, or at least as easily deducible to
systematic arrangement, a science which is in truth only a col-
lection of multifarious and imperfect observations, in which
every day's experience shows something essential which had
been omitted or mistaken.

Those who are profound in chemistry scorn equally the sys-
tem-maker and the system-adopter. Having themselves taken
nothing on the word of others, having repeated again and again
the examination of the prominent facts of chemistry, and being
busily employed in carrying the same minute and slow method
of investigation into the obscurer regions of this science, which
has served to guide them through those which they have already
explored, they are thoroughly conscious of the immensity of
this branch of knowledge, they toil on from fact to fact—although
the hope has long since died within them of seeing chemistry
reduced to a system—they give a hasty stare perhaps at the folly
of those superficial men who are loud in praising this beautiful
and almost perfect science, and resume their work at the inex-
haustible mine which lies before them—but which the superficial
man's eye is not framed to see.

It is much the same with Natural History. While the sys-
tematists find work for their slender powers in arranging and
re-arranging their collections of specimens, or even in classifying
beings upon paper, which they never had an opportunity of ex-
amining; and while the general students puzzle through the last
new classification the best way they can, and gape at the prodi-
gious facility with which the systematists invent new terms,
said to be Greek; those investigators of organised beings, who
combine a knowledge of anatomy and physiology with a know-
ledge of zoological and botanical external characters, and those
investigators of the unorganised kingdom who combine a know-

ledge of chemistry with a recollection of mineralogical external characters, regard every system with a degree of that contempt with which Nature herself seems to scoff at all attempts to trammel her in the classes and orders of any systematic catalogue whatever.

Scarcely had the Cuvierian arrangement of the animal kingdom been communicated to the world, than there started up a doubt, a plausible and ingenious doubt, which threatened to take away the very root of that classification. This doubt has now assumed so bold and importunate a voice that it must be heard.

Cuvier arranged animals into four grand divisions; the VER- TEBRATA, the MOLLUSCA, the ARTICULATA, and the RADIATA or ZOOPHYTES. Each of these divisions he regarded as characterised by an essential difference of structure.

1. The animals of the VERTEBRATED DIVISION, said Cuvier, present the brain and the principal trunk of the nervous system inclosed within an osseous envelope, consisting of the cranium and vertebral columm, the sides of this column giving attachment to the ribs and bones of the extremities, the muscles covering in general the bones upon which they are destined to act, and the viscera shut up within the head and trunk. This division included four classes ; viz. *Mammiferous Animals, Birds, Reptiles,* and *Fishes.* All these animals have red blood, and a muscular heart; a mouth with two horizontal jaws ; distinct organs of vision, hearing, smell, and taste, contained in the cavities of the face; never more than four extremities; the sexes always separate ; and a distribution nearly the same of the principal branches of the nervous system. Throughout the whole of this grand division, even between the species which are the most distant from each other, a striking analogy may be discovered; and a series of modifications of one general plan of structure may be observed from man down to the last of the fishes.

2. In the MOLLUSCA, according to Cuvier, there is no skeleton ; the muscles are attached to the skin only, which forms a soft envelope, contractile in different directions, and in the substance of which are formed, in many species, certain stony plates, called shells, the position and form of which are analogous to those of the skin ; the nervous system is contained along with the viscera within this general envelope, and is composed of a number of scattered masses, united by nervous filaments, the chief of these masses being placed upon the œsophagus and receiving the name of brain. Of the four senses placed in the face of the vertebrata, vision and taste only are

discovered in the mollusca ; except in the class Cephalopoda, which have also organs of hearing. In many mollusca, vision is wanting. This division presents in every case a complete system of circulation, and distinct organs of respiration. Those of digestion and of secretion are about as complicated as in the vertebrated animals. Some mollusca are hermaphrodites ; others have separate sexes. Cuvier divided the Mollusca into six classes ; viz. the *Cephalopoda*, the *Pteropoda*, the *Gastropoda*, the *Acephala*, the *Brachiopoda*, and the *Cirrhopoda*. The cuttle-fish, the clio, the slug, the oyster, the limpit, and the barnacle, are examples. Although the general plan of the organization of the mollusca be not so uniform in regard to the external configuration of the parts as the general plan of the vertebrated animals, still there is always a resemblance in the structure and functions of these parts equal to that which holds among the vertebrata.

3. In the ARTICULATA, the nervous system consists of two long cords, running along the belly, and swelling from space to space into knots or ganglions. The first of these knots, placed upon the œsophagus, and called the brain, is scarcely larger than the others. The envelope of the trunk in the animals of this division, is divided by transverse folds into a number of rings, the integuments of which are sometimes hard, sometimes soft, but to the interior of which the muscles are always attached. The trunk has often jointed extremities attached to its sides ; but in many cases there are no extremities. Cuvier arranged the articulated animals under four classes, viz. the *Annelida* or *Worms with Red Blood*, the *Crustacea*, the *Arachnida*, and the *Insecta*. It is among these animals that the transition is to be found from circulation through shut vessels to nutrition by imbibition, and the corresponding transition from respiration in circumscribed organs to that which is performed by tracheæ or air-vessels spread over the whole body. The organs of taste and vision are the most distinct in the articulated animals. In some of the crustaceous class only, there are organs of hearing. The jaws of the articulata, when they have any, are always lateral, moving outwards and inwards, never upwards and downwards.

4. In the three preceding divisions, the organs of sense and motion are disposed symmetrically, or nearly so, on each side of an axis. In the RADIATA or ZOOPHYTES, they are placed circularly round a centre. The animals of this division approach to the homogenousness of plants. They present neither any distinct nervous system, nor organs of any particular sense. In some of them a vestige of circulation may with difficulty be

perceived. Their respiratory organs are almost always on the surface of their bodies. The greater number have only a single digestive cavity, with one opening for mouth and anus, and the last-families of this division present only a kind of homogenous pulp, which is sensible and mobile. Five classes of Radiata were acknowledged by Cuvier, viz. the *Echinodermata* or *Sea Urchins*, the *Intestinalia* or *Intestinal Worms*, the *Acelaphæ* or *Sea Nettles*, the *Polypi*, and the *Infusoria*. Separate sexes are observed among the intestinal worms. The greater number of the other zoophytes are hermaphrodite and oviparous. Many of them have no organs of generation, but are reproduced by buds, or by division. Many of the zoophytes, as also some of the mollusca, form aggregations of various forms, whence the name of zoophytes or animal-plants was at first derived. Such is a brief outline of the arrangement which Cuvier published about three years ago, in four volumes, as an introduction to his long expected work on the anatomy of animals.*

The new views of the animal kingdom, of which we have now to give some account, regard the articulata, particularly the crustacea and the insecta, as approaching much nearer to the vertebrated animals than Cuvier will allow. It is insisted on that insects have a skeleton, all the pieces of which are not only identical throughout that whole class, the most numerous class of the animal kingdom, but which also correspond each piece to a certain bone of the skeleton of the vertebrata ; yet this view, although never expressed with so much decision as it lately has been by M. Geoffroy Saint-Hilaire in three Memoirs read to the Institute, has existed in some measure from the most ancient times. M. Geoffroy Saint-Hilaire quotes indeed the remark of Willis with regard to the lobster, Quoad membra et partes motrices, non ossa teguntur carnibus, sed carnes, ossibus.† But the essence of this remark may be found in the beginning of Aristotle's fourth book on the Natural History of Animals. Ἐν δὲ τὸ τοῦ μαλακοςράκων· ταῦτα δ᾿ ἐςὶν, ὅσα τὸ μὲν ςερεὸν ἐκλὸς ἔχουσιν, ἐντὸς δὲ τὸ μαλακὸν καὶ σαρκῶδες. ‡

In modern times these notions of Aristotle and Willis have been adopted by most naturalists. In 1771, De Geer applied the remark of Willis to insects.§ In 1816, M. de Blainville

---

* Le Règne Animale distribué d'après son Organization, 4 Tomes. 8vo. Paris, Deterville, 1817.

† De Anima Brutorum, 1692, p. 11.

‡ Περὶ Ζωων Ἱςορίας, Δ.

§ Mémoires pour servir à l'Histoire Naturelle des Insects, 1771, Tom. II. p. 2.

divided all animals into vertebrated and invertebrated, the former class being articulated internally, and the latter externally.* Even Cuvier, though he has separated the articulata from the vertebrata by the interposition of the mollusca, a division of animals which in the perfection of their internal structure approach much nearer to the vertebrata than do any of the articulata, has not overlooked the fact that many of the articulata approach in some of their external powers to the perfection of the vertebrata, and that they may even be regarded as possessing a skeleton. Although he has expressed himself with much vivacity against the peculiar views of M. Geoffroy Saint-Hilaire, yet he has admitted that the articulated rings which surround the body, and often the extremities also, of the articulata, hold the place of a skeleton. As they are almost always sufficiently hard, he has observed, they are able to furnish all the necessary fulcra for motion ; so that we meet in the articulata, as in the vertebrata, with walking, running, leaping, swimming, and flight.

M. Geoffroy Saint-Hilaire, is accounted one of the most distinguished naturalists of France ; and must be acknowledged by all who have ever heard his prelections, or read his works, to be striking and original in many of his conceptions. He is apt, however, to be exceedingly diffuse, often vague, and not unfrequently confused and indistinct in the expression of his ideas. We shall now endeavour to furnish our readers with an abstract of his opinions on the analogies in the organization of the skeleton of the articulated and vertebrated animals.

The first of his three Memoirs which are before us, refers, 1st, to the general relations of insects to one another ; and, 2dly, to the general relations of insects to the vertebrated animals.

1. M. Geoffroy Saint-Hilaire observes, that the body of an insect naturally divides itself into six segments, viz. *One* which has always been regarded as the head ; a *second*, called the corselet, which undergoes many modifications in the different tribes of insects, but which always bears the first pair of extremities † ; a *third*, characterised by its furnishing a basis for the first pair of wings. This basis, when of very small extent, receives the name of scutellum, as in the cantharis and other coleoptera ; when enlarged, as is the case in the hemiptera,

---

* Prodrome d'une nouvelle distribution des êtres. Bulletin des Sciences, juillet, 1816, pp. 107, 123.

† The true insects have four wings and six legs ; and the crustacea ten legs, corresponding to the ten extremities, wings and legs that is of the insects.

particularly in the grasshopper, beyond the size of the former segment, it assumes its name, and is called corselet; a *fourth*, or thorax, which bears the four posterior extremities, and the second pair of wings; a *fifth*, composed of the abdomen; a *sixth*, consisting of the last ring, which bears a variety of different appendages.

Each of these six segments is subdivisible. The thorax, for instance, divides itself into two parts, each bearing a pair of the posterior extremities; and the abdomen most frequently into eight parts, as is very distinctly seen in the order orthoptera.

M. Geoffroy Saint-Hilaire offers to demonstrate, that all insects, even the most extraordinary and monstrous almost in their appearance, may be referred to this common law of conformation; that although sometimes the second segment, and in other cases the third, is enlarged so as to cover a great part of the animal, still essentially the body of all insects consists of the six pieces now enumerated; that these pieces, however diversified in their relative proportions, still observe one invariable order of place, and remain constantly faithful to one principle of connection and insertion into one another.

2. M. Geoffroy Saint-Hilaire states, that the *first* segment of the body of the insect does not correspond to the whole head of the vertebrated animal, but that it consists of the bones of the face, the bones destined to protect the cerebrum, and the hyoid bones.

The *second* segment is formed of the protecting bones of the cerebellum, the bones of the palate, and the larynx. The *third* segment includes the interparietal, the parietal, and the opercular bones. The three anterior segments arise then, from a dismemberment of the skull of the vertebrated animals. Burdin, Kielmeyer, and J. P. Frank, had pointed out, in a vague way, an analogy between some parts of the skull and the vertebræ; and this analogy had been pursued by Oken, Spix, Meckel, and de Blainville. The last mentioned naturalist had announced that he could demonstrate that the head of vertebrated animals was composed of a set of vertebræ soldered together, and each of them developed in proportion to the nervous system which it contained. Now M. Geoffroy Saint-Hilaire considers the visible dismemberment of the skull in insects as confirmative of the ideas of the above-named physiologists.

The *three* segments which follow correspond to the trunk of the vertebrata, and like it are divisible into thorax, abdomen, and coccyx.

As to the posterior wings, M. Geoffroy Saint-Hilaire considers them as analogous to the swim-bladder of fishes, or, what comes

to the same thing, to the membranous lungs or air-bladders of birds. At the transformation of the nympha into a perfect insect, the wing is in fact a kind of pouch with a distinct cavity. The membranous sides of this pouch, as they dry, gradually come into contact, and assume the appearance of a single lamina.

Insects have an auditory or branchial opening; and along the sides of their abdomen a set of perforations, called stigmata, analogous to the opening, along the lateral line of fishes. These perforations are so many issues for the secretion of a long glandular apparatus existing under the lateral line. Birds, also, have an apparatus of the same kind reaching from the tongue to the anus, but formed by interrupted portions. Even in mammiferous animals, the remains of this apparatus may be discovered; as, for instance, in the genus, shrew.

Thus it is, then, that M. Geoffroy Saint-Hilaire announces generally in his first Memoir, that each piece of the body of an insect has its fellow-piece in the body of the vertebrated animals; that each piece is always in its own place; and that it constantly remains faithful to at least one of its functions. The lungs, the heart, and all the sanguiferous apparatus, gradually go on becoming less and less evident from man to the last of the insects; but the skeleton remains entire.

In his third Memoir, M. Geoffroy Saint-Hilaire, after having shewn that the skeleton of the articulata is covered by an epidermic lamina, which, separating the bones from the immediate contact of the air, serves to prevent their necrosis, goes on to institute a more minute comparison than he previously attempted between the vertebræ of the higher classes of animals and the rings of the crustacea. He sets out in this comparison by observing, that we must distinguish in a vertebra what is essential, from what is accessory. Now, it is not the form surely of that kind of bone which we call a vertebra which is essential, for its form varies ad infinitum; nor are the functions of a vertebra less variable. In certain parts only of the vertebral column of the vertebrata, we see the vertebræ at their highest point of development, and executing their functions in plenitude; while, in other parts, these functions are almost null, and the vertebræ themselves are reduced to mere rudiments. By considering thus the variations in form and office, which the vertebræ undergo in the spinal column, properly so called, and in the prolonged coccyx of the vertebrata, we are prepared to meet new modifications of these bones when we descend to the examination of the articulata.

M. Geoffroy Saint-Hilaire states, on the authority of M. Serres, that each vertebra is formed at first of four osseous

points, considerably separated from one another at the epoch of their appearance, but which gradually extend themselves into a ring, so as to surround the spinal cord. Such are the form and office of a vertebra in its greatest state of simplicity, and before it has acquired those prolongations or processes on different sides, which furnish it with new relations and additional functions. A vertebra then is essentially formed of four pieces, which coalesce with more or less regularity under the form of a ring.

If we turn our attention to the segments of the body of the lobster or the crab, we find no material change from this constitution of a vertebra. Each segment is also composed of four elementary pieces. This is very visible in young individuals ; and in some regions of adults ; for instance, in the tail, the extreme rings of which preserve for a long time the conditions of the early state. Each segment corresponds to a true vertebra in its number of pieces, in the progressive order of its ossification, in its annular form, and central canal. Nor is the function of the segments so widely different from that of the vertebræ as might at first sight be supposed. They both serve as plastrons for the defence of the nervous system.

If we pass to the specific variations of these parts, every circumstance presented in the vertebræ of the vertebrata finds its parallel in the segments of the crustacea. Some vertebræ have a very large opening, the dorsal part of which is lamellous, the sides elongated into projecting processes, and the sternal arch reduced to a simple slip of bone rising in the centre into a tuberosity. Such is the first vertebra of the dolphin of the Ganges, and such exactly is each segment of the tail of the craw-fish.

There are other vertebræ with a narrower canal, their principal character consisting in an expansion of the lateral parts, or transverse processes. The atlas of the dog and the panther present these characters, altogether in the same measure as the different pieces of the tail in the female crab. M. Geoffroy Saint-Hilaire arranged some of these pieces before the Institute in a group of true vertebræ, and observed that it was difficult to make the distinction. He then substituted for the atlas of the carnivorous animal the first coccygeal vertebra of the bison (*bos urus*, Gmelin) ; when the comparison with the vertebra of the crab afforded still a more striking result.

These observations refer to an identity in form, which of all the circumstances about the bones in question is the least important. There is no absolute or general form of vertebræ.

These bones offer themselves to our view in each class, with a classic difference. They are exceedingly long in birds, and those of the neck especially, form a lengthened tube with numerous aspersities on its external surface. In the tortoise tribe the cervical vertebræ, except the second and third, have no spinous processes ; the dorsal, lumbar, and sacral vertebræ are soldered along with the ribs and carapace or upper buckler, into one piece, so that all these parts are deprived of the power of motion ; while the coccygeal vertebræ remain free and mobile, and are at the same time flattened and prolonged laterally. It is principally in fishes, however, that we find the most striking modifications of the vertebræ. In them, the body of each vertebra presents two conical cavities, turned towards each other by their summits, and filled with a semi-transparent substance, of a gelatinous consistence, destined, as is usually thought, to favour the movements of the vertebral column ; but upon which M. Geoffroy Saint-Hilaire hazards a new, and not very probable, conjecture. Two pair of processes arise from the body of each vertebra. The upper pair rise almost perpendicularly ; and uniting, leave between them and the body of the bone, the vertebral foramen, which is thus situated above the body of the vertebra. The two other processes stretch out in the manner of transverse processes, at an angle of from 60° to 80°, through all the vertebræ placed between the head and the anus. But in the coccygeal region, these transverse processes are brought into contact. The most remarkable circumstance, however, about the vertebræ of fishes, is the canal in many of that class, and the groove in others, which is hollowed through the basis of the transverse processes, and which serves for the lodgment of the aorta ; so that above, or in other words, dorsad of the bodies of the vertebral, we have the canal for the transmission of the spinal cord, while below, or sternad of the same parts, we have a second canal, extremely similar to the former, or at least a groove, for the transmission of the trunk of the arterial system.

Now, if the modifications which the vertebræ undergo, even amongst the vertebrata, be so remarkable, and extend not merely to form, but even to function, it would be altogether absurd for those anatomists who choose to oppose the doctrine advanced by M. Geoffroy Saint-Hilaire, to expect that the vertebræ of the crustacea were in all points to resemble the vertebræ of the vertebrata. They might as well insist that the vertebræ of the mammalia should be exactly similar to those of birds, or to those of fishes. Reasoning from the different forms and the different unctions which the vertebræ present in the higher classes of

animals, we should rather be led to expect new modifications in the animals of the lower classes; and this is exactly what M. Geoffroy Saint-Hilaire contends to be the fact.

The principal character of the vertebræ of the crustacea is, their presenting a canal much more considerable than that which exists in the vertebræ of any of the higher classes. This is the difference in form; and the difference in function which is connected with this, is, that certain additional organs come to be contained within the vertebral canal, besides part of the nervous system, and part of the arterial system. The additional organs are of course those which in the vertebrata are placed around, and hang from, the vertebral column, namely, the muscles which are destined to move it, and the viscera. Break open what is commonly called the tail of a craw-fish, a lobster, or a crab, but which is in reality the abdomen, and what are the parts which are brought into view? The trunks of the nervous system, the trunk of the arterial system, the intestinal canal, and the muscles of the spine. Ought we, in truth, to be more astonished at finding the intestinal canal within the vertebral column in the crustacea than we were at finding the aorta within the vertebral column in fishes? Ought we, in truth, to be the more astonished at finding the abdominal viscera hung to the narrow vertebræ of the vertebrata, or at finding them contained within the expanded vertebræ of the crustacea? Which of the two, we would ask, is the more natural, the muscles of the spine applied outside to the vertebræ, or contained within? The vertebræ form, in all animals, a pillar for support; in the higher classes of the vertebrata, they form a protecting tube for the spinal cord; in fishes they do still more, they form a protecting tube to the aorta; in the articulata they do still more, they contain the organs of digestion, and the muscles for the locomotion of the trunk. This may appear ridiculous and illogical to Cuvier; but it has not appeared so to Nature.

There is in the minds of many naturalists a hankering after an uninterrupted scale in the animal world, descending gradually from animal to animal, from man down to the last of the zoophytes, from much complication of structure and much perfection of function, through a regular series of less and less complication, and less and less perfection, till we arrive at length at an animal which shall be gifted with a barely perceptible degree of life. Now, those who favour this notion insist that there is no break in the chain—no sudden leap from one kind of organization to another kind quite different. They point to the bat, which, notwithstanding its flight, is still a quadruped; they point to the ornithorhynchus paradoxus, which, to the trunk of a qua-

druped, unites the beak of a sea-fowl; they point to the whale, which, though dwelling in the ocean, is still a mammiferous animal; they point to the trigla volitans, which, when pursued by its enemies, raises itself out of the water into the air, and flies the length of a stone's cast. They may think the transition too rapid from the bones covered with muscles of the vertebrata, to the bones containing the muscles, and covered only with epidermis of the crustacea. But is there no mediate step? M. Geoffroy Saint-Hilaire has shewn that there is. The crustacea, in fact, are in this particular exactly in the same condition with many fishes; with the siluri among others, which present the bones of the head, the bones of respiration, and the bones of the anterior extremities, pushed to the surface and covered by an epidermis only, which cannot be separated from them without difficulty. The similitude is perfect. The muscles in these fishes have passed within the bones; the bones have become an external casque and coat of mail, just as they are in the crustacea; and all that remains of integuments is a thin layer of epidermis, which sticks close, and is almost identified with the surface of the bones.

M. Geoffroy Saint-Hilaire, having established his doctrine of the identity of the vertebræ with the bone of the trunks of the crustacea, proceeds to make some remarks on the ribs. These are, in all cases, appendages of the vertebræ; and if the vertebræ have been expanded, and pushed to the surface of the body, it is but natural to expect that the ribs will have undergone an analogous metastasis. Accordingly we find, that the ribs, still stretching out on each side from the vertebræ of the crustacea, but supplanted in their office by the expanded vertebræ themselves, have assumed a modified form, and have become, as the ribs of serpents partly are, organs of progressive motion. The locomotive appendages of the crustacea are, in fact, nothing else than transmuted ribs. They are called legs; and so they are, so far as use is concerned: but it must by no means be supposed that they are analogous to the six true legs of the insecta. Parts analogous to the six true legs of the insecta exist in the crustacea; but they are carried forwards in these animals, they have betaken themselves to a new function, and have acquired a name (*pieds-máchoires, Cuvier; pattes-máchoires, Savigny*), indicating that they have become assistants to the jaws. The vertebral appendages, or ribs, on the other hand, have assumed the form and office of legs.

The legs of the craw-fish have been distinguished into true and false. The true legs are the transmuted five pair of ribs, situated under the pectoral region. The false legs are the five others of the abdominal region. They have received the names

of true and false, from their difference of size. The former set, from their development, have acquired exclusively the exercise of the function of progression. The latter set are almost without importance, except in the female, to which they furnish at spawning time a multiplied surface for the attachment of her ova. These false legs, or rather transmuted abdominal ribs, assume different forms and different offices in different species. In the squillæ (cancer mantis, Linnæus) they are sufficiently prolonged and extended to have the form and use of fins. In crabs, they are slender, elongated, and rib-like in form ; in the male, they become subservient to generation, being used both for laying hold of the female and as a kind of penis. In the female, they are larger, more multiplied, more bearded upon the edges, and serve still more effectually as organs of prehension. In the iuli and scolopendræ, that is to say, in the greater number of animals vulgarly called millepedes, the abdominal ribs assume the character and the use of true feet. This they do, indeed, not so much by any new development in themselves, as by the pectoral ribs being reduced to the development of the abdominal. Hence all the transmuted ribs touch the ground at once, and serve equally for progressive motion. The scutigeræ also employ all their ribs as organs of locomotion ; but in this family of millepedes, it is not by a reduction of the pectoral appendages, but by an increased size of the abdominal, that this is brought about.

The character of the millepedes, of the scolopendræ among others, consists in the equality of their extremities ; but a very different character belongs to the lobster and its congeners. These opposite characters form illustrations of a system of compensation in the organization of animals, which M. Geoffroy Saint-Hilaire has very beautifully unfolded in his *Philosophie Anatomique.* A is enlarged in one species, because B, its neighbouring organ, is much less : while the reverse exists in another animal. The size of parts is no character of organization, considered abstractedly ; but in regard to particular species it becomes a consideration of the very highest importance. How comes this equality in the extremities of the scolopendræ ? It is determined by the relation of the contiguous parts. It arises from the equal dimension of all the segments of the trunk. The uniformity of these determines a like uniformity of the transmuted ribs. Whence, on the other hand, comes the inequality of these appendages in the crustacea ? The segments of the abdomen, improperly called the tail, form rings of a considerable size ; but the vertebræ of the thorax present a series of much smaller pieces, disguised in some measure indeed by the covering

which they receive from a long and broad hood-piece. But the fact is, that in the chest exist the little vertebræ and the long legs ; while the abdomen is formed by larger vertebræ, giving out false extremities.

This system of compensation may be seen throughout the whole animal kingdom ; in the superior classes, as well as in the inferior. Thus it is, that in serpents we find no longer any trace of extremities, while we count in some of these animals as many as 300 vertebræ. The boa constrictor has two hundred and fifty-two thoracic, and fifty-two coccygeal vertebræ. The coluber natrix, or ringed snake, has two hundred and four thoracic, and one hundred and twelve coccygeal vertebræ. The vertebræ of the millepedes increase in number in proportion to the diminution of their extremities. Thus, the scolopendra deprimata has twenty segments, or vertebræ ; the scolopendra with twenty-eight less, a third more ; and the scolopendra filiformis, forty-six.

From form and function, M. Geoffroy Saint-Hilaire next turns our attention to chemical composition, and shews us the analogy in this point of view between the hard parts of the crustacea, and the bones of the vertebrata. The following are analysis by M. Cherreul :—

1. Bone of the head of the cod (Gadus Morhua).
   Potass, muriate of soda, carbonate of soda, & phosphate . . .60
   Phosphate of lime, ... 47.96
   Phosphate of magnesia, ... 2.
   Carbonate of lime, ... 5.50
   Water and animal matter, ... 43.94
   _____
   100 parts.

2. Carapace of the craw-fish (Cancer Astacus).
   Muriate of soda and other salts of soda, ... 1.50
   Phosphate of lime, ... 5.22
   Phosphate of magnesia and iron, ... 1.26
   Carbonate of lime, ... 47.26
   Water and animal matter, ... 44.76
   _____
   100 parts.

3. Carapace of the crab (Cancer Pagurus).
   Muriate of soda and other salts of soda, ... 1.60
   Phosphate of lime, ... 6.
   Phosphate of magnesia, ... 1.
   Carbonate of lime, ... 92.80
   Water and animal matter, ... 28.60
   _____
   100 parts.

Muriatic acid acts upon the hard parts of the crustacea exactly as it does upon the bones of the vertebrata; removing the mineral matter, and leaving the animal, which can then be divided into numerous laminæ. The chief chemical distinctive character is, that in the bones of the vertebrata there is more phosphate of lime and less carbonate; while in those of the crustacea, the carbonate of lime preponderates over the phosphate.

We have thus endeavoured to abridge the three Memoirs of M. Geoffroy Saint-Hilaire. In our next number we shall give some account of the labours of Dr. Schultze on the skeleton of animals, and on development of the vertebral column.

In the views of the former we cannot overlook the fact, that there is a good deal that appears to be more fanciful than real. But that he has pointed out many striking analogies between the skeleton of the vertebrata and that of the articulata, does not admit of a doubt. We regret that these names have been introduced. For are not the vertebrata articulated? Are not the articulata vertebrated? The classification of animals is not to be founded on their bones alone, nor on their nervous system alone, nor on their organs of circulation alone, nor on their digestive, nor on the locomotive organs alone, nor on the number and form of any single set of organs of their frame; but in the differences which they manifest in the whole assemblage of their parts and living powers. The eye of the physiologist runs through the whole kingdom of animated nature, without omitting the notice of one of these accessary circumstances upon which systematists have so frequently fixed the whole of their attention, and unfortunately built their classifications. Catalogues are necessary where the objects of examination are so numerous and varied; and even a name for each species is necessary. All that we ask is, not to be tortured by the affectation of inventing new names which are not in the slightest degree better than the old,—and not to be teazed with classifications which are founded on limited views, when the whole constitution of animals ought to be taken into the account.

Art. III. *Experimental Observations on the Operation of Litho-tomy, with the Description of a Fascia of the Prostate Gland, which appears to explain Anatomically the Cause of Urinal Infiltrations, and Consequent Death. By Granville Sharp Pattison, Esq. Surgeon.—From the American Medical Re-corder for January,* 1820.

Observations on the Parts concerned in Lithotomy, which are intended to prove that Mr. Pattison's Ideas of a Prostate Fascia are erroneous. By Horatio G. Jameson, of Baltimore, M.D.—American Medical Recorder, July, 1820.

A Reply to certain Oral and Written Criticisms, delivered against an Essay on Lithotomy, published in the January Number of the American Medical Recorder. By Granville Sharp Patti-son, Esq.

What can be more interesting to surgeons than the ques-tion involved in the papers at the head of this article ?   An in-quiry into the cause of the many deaths which occur in conse-quence of the operation of lithotomy.   It would be a mere waste of words to argue upon the importance of such an investigation.

In these Essays there is displayed a little of that rancour which generally insinuates itself into the discussion of surgical subjects ; still it is a happy omen for the surgery of America, that keen disputes have commenced on points of surgical ana-tomy. The present controversy is upon the merits of the discovery of a fascia connected with the prostate gland. Although the rage of discovering new fasciæ at the groin has subsided, and though many of these discoveries are now forgotten, still it cannot be denied, that much practical good resulted from the investigation of how far the *discoverers* were entitled to their claims. But both hernia and aneurism have now gone out of fashion ; still, in the anatomy of the fasciæ of the perineum, there is as wide a field for contention, and it promises as rich a harvest to *discoverers*, and as great a torment to our students, as the fasciæ connected with hernia did formerly. Yet we may hope that much practical good will result from the critical examination of the anatomy of the pelvis.   In this country, at the present moment, the question of lithotomy is by some very keenly taken up, but instead of its being made the matter of anatomical and pathological discussion, it is attempted to be settled by the repetition of experiments on the living body, which, by almost every surgeon, were supposed to be set at rest by the experience of ages.   The high operation is again attempted to be introduced into general practice. It only

requires this to be said, to prove that those who wish to intro-
duce it, have conceived upon strong conviction that there is
something radically wrong in the lateral operation. If the
common method of performing the lateral operation is to be
with the gorget, then it is not wonderful that surgeons should
attempt to change their manner of operating. As it is generally
agreed, that in such an important operation as extracting the
stone, we must be guided in a great measure by the records of
the proportionate success of the different methods of operating,
we must here give a slight sketch of the history of the high
operation. In the latter part of this Essay, more shall be said
on the merits of this operation, and on the manner in which the
discussion has again been brought before the public.

History shews us, that the high operation has, in all ages,
had warm advocates in the persons of young surgeons ; but it
also shews us, that those same surgeons, when they had more
experience, gave it up, except in very particular cases. It was
at one time keenly patronised by Cheselden, but he gave it up
in favour of the lateral operation, and almost every author who
has written upon it, and particularly Middleton, Smith, Douglas,
and Heister, although they were in the first part of their career
keen advocates for the operation, state that a very small propor-
tion of patients recover, upon whom this operation has been
performed, and who have passed their thirtieth year. What was
the success of Rau and Cheselden? It has been stated, upon the
best authority that Rau cut 1500 patients successfully, and we
have been told by an authority which is open to contradiction,
if his testimony be not correct by many gentlemen at present in
London, that the professor of surgery in Moscow (Hildenbrand),
at this moment probably alive, had cut previous to 1818, more
patients than Rau, and that the proportion of deaths was only
one in fifty ; but he does not cut with the gorget. The sur-
geon who gave us this information saw him perform it fifty
times, and of those, only one patient died. This should be suf-
ficient proof, that the lateral operation, performed in a *certain
way*, is a very successful operation ; therefore it is of the first
moment to inquire what is the best method.*

* We have upon good authority been informed, that there is at present in St.
Petersburgh, a young man, whose father was an itinerant lithotomist. The son
was taught by the father the method of Frere Jacques, and commenced at the age
of fourteen to cut patients. He was so successful, that he got a licence from
Government, to cut the patients in all the hospitals of St. Petersburgh. This litho-
temist is now twenty-two years of age, and he has already cut more patients than

Let it be recollected, that the present advocates for the high operation recommend the use of the gorget in the lateral operation. It has been already stated, that it is not surprising that those who imagine the gorget to be the best instrument for performing the lateral operation, should be desirous of giving up the operation altogether; and why, may be discovered by the following list of difficulties and mishaps, some of which every surgeon, who has seen many operations with the gorget, must have witnessed. But in the first place, let us inquire why it is that surgeons prefer the operation with the gorget. Is it not because, having a staff in the bladder, into which they can nicely fit the beak of the gorget, that they think there is no fear of missing the bladder, when they force in the instrument. How often does one hear students say " the gorget for me; let me get the beak into the groove of the staff, and then I shall cut into the bladder." This then is the grand secret; but is not the surgeon often foiled in his attempt ?—that must be granted; and what have the consequences been? Has not the patient been *frequently* sent to bed with the conviction, at least the assertion, that there is no stone? Has not the patient died, and the bladder been found uncut, and the stone lying in it ? Has it not been often, *often* said that the stone is sacculated; and upon examination after death the bladder found to be the sac? Has not a surgeon, determined not to be foiled, brought away the stone surrounded by part of the bladder ? These are but one train of accidents which, to the knowledge of many, have occurred not unfrequently within the last ten years.

Let us endeavour to give some idea how such accidents may happen. The principal reason is, that the bladder has not been opened, and how does that take place ?

1st. Let any one examine the gorgets in the principal cutler's shops in London. The beak of the gorget is made very small, and the groove in the staff is made to correspond to it, and this instrument is believed to be good, because the two instruments accurately fit each other. The first objection to the instrument is very obvious, if we recollect the size of the urethra compared to the size of the groove, but in operation ; it is still more so, when we see the difficulty the surgeon has in finding the staff, and cutting into the groove ; how often has a surgeon been seen to

---

any six surgeons in London. We dare not state the number that has been given to us, for it might destroy the credit of the story with many, though we place implicit confidence in the honour of the gentlemen who have reported it to us. But we shall make it our duty to inquire farther into the subject.

make. half a dozen cuts into the groove, before he can fix the beak? Is it not natural to suppose, that being foiled in this, which appears simple, he may lose his presence of mind and not fix the beak at last? All this difficulty is owing to the imperfect formation of the staff, an imperfection which ought to be at once apparent to any one who recollects the size of the urethra. On this point we cannot do better than quote the following from the Surgical Observations by Mr. C. Bell, No V. p. 131. " The staff is made too small, it ought to dilate fully, and occupy the urethra; the groove should be wide and deep." The staffs in the shops are small, with a trifling groove adapted for the beak of the gorget, by which surgeons have contrived to make a simple matter difficult. The consequence of the staff being made small, is, that the membrane of the urethra rolls upon it and is cut with difficulty; and when the cut is made, the sides of it do not expand to display the wound, the membrane closes again, and a second and a third wound must be attempted; who has seen much of the operation with the gorget, and has not seen the frequent repetition of incisions into the groove of the staff, and the frequent attempts to lodge the beak of the gorget in the groove of the staff? When we have a staff as large as the largest catheter, and the groove deep and broad, it makes this part of the operation easy; the membrane over the groove is easily struck, and when this is done the wound opens, and is easily found again if it should appear necessary to withdraw the knife before completing the incisions in the bladder." With such a staff it is hardly possible for the greatest bungler to be foiled in getting into the bladder, even with the gorget.

2d. Look to the length of the staffs as they are commonly made, and seeing how short they are, is it not highly probable, that the assistant may so far forget his duty, during the several attempts of the surgeon to introduce the beak into the groove, *as* to push the point of the staff through the hole which has been made in the urethra, and thus direct the gorget towards the rectum? The danger of such an accident is easily shewn on the dead body. But let us suppose that the beak of the gorget is fairly in the groove of the staff, is there now no danger of its slipping? To shew that this may happen, take the gorget and staff in your hand, run the beak along the groove, see how difficult it is to keep it right, even with the eye directing the gorget; then think of the difficulty there will be in directing it along the axis of the pelvis, with the patient struggling, and when in imitation of a master you wish to do it with an air of decision. It may be truly said, to do this well, requires the hand of a master.

The next series of accidents occur at the neck of the bladder ; they will not be dwelt on here, for the limits of the paper will not permit of it ; but what has been *proved* by dissection to have happened, will be merely mentioned. The bladder has been driven before the gorget, and in groping with the finger it has been separated from its connection to the os pubis. This was in a child. The bladder has been pushed before the gorget, and a large sac has been formed anterior to the bladder by the motion of the forceps. This was in an adult. In both of these cases the stones were alleged to be contained in *sacs*, until dissection proved the sac was formed by the bladder.

Perhaps this accident will be allowed to be liable to happen, if (the bladder being empty of urine) the beak strike against the stone, and thus carry all before it ; or if the prostate be of a scirrhous hardness, such as will produce more resistance than the loose connections of the neck of the bladder are equal to. Both of these cases may be proved by dissection. The inner membrane of the bladder may be pushed before the gorget. Of this we have no proof by dissection ; but a surgeon, who always operates with the knife, observes, that he has felt, on pushing his finger in with the knife, the danger of pushing up the inner membrane. The danger of driving the gorget through the bladder, of wounding the rectum, or the pudic artery, need not be dwelt on. These are faults of the operator, more than of the instruments.

The *facts* which have been stated will be sufficient to prove, that the operation with the gorget is not so simple an operation as some would pretend, when they recommend the gorget as the best instrument "*for the man who is not well acquainted with the anatomy of the parts.*" One may be allowed, in thinking of such a sentiment, to express himself warmly. Can any good man read the cases which are detailed, or think of the difficulties which the greatest characters in the profession of surgery have acknowledged they have felt, in making up their minds as to what parts are to be cut ; can he bring himself to perform such an operation as that of lithotomy, conscious that he must trust *all* to the adaptation of his instruments ; and fully aware that if he makes the slightest slip, that he is so ignorant of the anatomy of the parts that he cannot remedy his mistake. The law has been of late severe in punishing presuming ignorance with heavy penalties ; but what is a crooked arm to the crime of causing the death of a man, and that by greater tortures than were ever invented by the fiercest bigot. The very idea of a man unacquainted with the anatomy of the perineum, undertaking the operation of lithotomy, makes one shudder.

But there is really a great mistake in supposing that the gorget is the easiest instrument to pass into the bladder ; and of this we hope our reader will be satisfied when he compares the operation by the knife with that of the gorget.

A large grooved staff, such as has been already described, and which will distend the urethra to the utmost, is fairly lodged in the bladder. A deep and a cautious incision, one perfectly safe to those who know the anatomy, is to be made through the muscles, fat, &c., by the side of the anus. Now the staff can be easily felt, and easily cut upon, and the urethra being put upon the stretch, by the wideness of the groove, gapes open, when an incision is made into it, instead of closing again, as in the common operation with the gorget. Now, where is the difficulty of carrying the same knife that has made the outer incision, or a common bistory, into the bladder ; or where is the danger of cutting any thing but what we wish, if we place the forefinger of the left hand upon the part of the staff into which the knife has entered, aud push the knife forward with the right hand, keeping it correctly in its place with the left forefinger, until the knife cuts a *way* for this finger into the bladder ; *now,* the finger is in the bladder, the stone can be felt, and all our fears of not reaching the bladder should be at an end ; we may enlarge the opening in the bladder, and that as we will, with the same knife, or with a probe bistory. Here then is a *feeling* operation most essentially different from the random plunge of the gorget.

Let us here quote the description of the operation with the knife from the work of the author, who has the merit of *always* performing this operation, and of having been on every occasion the strenuous adviser of it.

" 1st. The staff is struck upon the stone, and made to rest in contact with it.

2d. The point of the knife is struck into the left side of the perineum, just under the arch of the pubes, it is carried downwards by the side of the anus, and past it.

3d. The forefinger of the left hand is put into the wound, and the rectum pressed down, and the muscles and internal fascia cut across.

4th. The edge of the knife is turned up, and the membranous part of the urethra, and the face of the prostate gland exposed.

5th. The point of the knife is pushed into the groove of the staff, and carried forward, and the prostate gland is opened by a lateral movement of the knife.

6th. The forefinger of the left hand follows the knife. The edge of the knife is directed by the forefinger, and enlarges the

wound of the bladder; the knife is withdrawn, and the forefinger is thrust deeper, so as to touch the stone.

7th. The forceps are introduced, and touch the stone."

It has been said, that the operation with the knife must be very difficult to perform in a fat man, but in saying so, it is forgotten, that all the fat is external to the prostate, and that through this fat we must make such an incision as will admit the three fingers knuckle deep; to say that the gorget is the best instrument for a fat patient, is only saying, that the farther the cutting point is from the part held in the hand, the easier is the cut made, or the more concealed the part, the more boldly we may make the plunge.

Let us now consider the objections which have been made to the lateral operation, by those who use the gorget in preference to the knife. The great danger is supposed to be from bleeding, but the means hinted at, to prevent this accident, militate more against the plan of cutting certain parts, than against the instrument. Upon the authority of Mr. Pattison, we state the following conversation, which he says he had with Mr. A. Cooper. It is proper to remark, that in Mr. Pattison's first Essay, he gives the following conversation, as one he had " with my friend Mr. ———, who deservedly stands at the very head of his profession in Great Britain." But in defence of his paper he gives us Mr. Cooper's name. " The longer I practise, the more am I convinced, that the smaller the wound made in operating for lithotomy the better.* I may not live, but probably you will, to

---

* In answer to this we state the following experiment :—The pelvis was divided so as to leave the bladder and penis attached to the right side. The parts were so dissected as to leave the prostate and bladder quite exposed on their left side. A stone was put in by the fundus of the bladder; an opening was made in the membranous part of the urethra and prostate, sufficient to admit the finger and a pair of forceps. The stone was about an inch in diameter. It required the whole force of one person to keep the portion of the body on the table, while another was trying to drag the stone through the small opening ; and it was also necessary, before the stone could be extracted, to push with the left hand against the face of the prostate, otherwise the whole would have been pulled out with the stone. This may give an idea of the resistance of the parts at the neck of the bladder, which we are advised to dilate : for it should be recollected, that the arch of the bones could not resist here, as the pelvis was divided, neither could the muscles, as they were removed. It was the sphincter of the bladder and the prostate only. On everting the parts, after the stone was brought through, the prostate was not found dilated, but *broken* into many small portions, and the ducts of the testicle quite destroyed. This method of castrating must be performed frequently, where the parts are thus lacerated ; but it may be avoided by cutting sufficiently.

see the neglected and despised Marian method (apparatus major) under some slight modification revived. I do not conceive that the danger of a large wound arises from the division of a membranous part, but from the risque that in making such, some large vessel will be wounded and much blood lost. Hemorrhage is I conceive the cause of death, in most of the operations which terminate fatally; at least, every patient of mine who has died, has, during the operation, lost a very great quantity of blood."

If one will consider the quantity of blood which is sometimes lost by accident, sometimes after amputation, and that which is lost by flooding, and compare it with the most bloody operation of lithotomy (where the pudica communis is not opened), then we must come to the conclusion, that some other cause for death after lithotomy must be assigned. A patient was said to have died of bleeding : on injecting the pelvis, to discover the source of the supposed fatal hemorrhage, not an artery larger than the transversalis was found opened.* It is not possible to imagine that Mr. Cooper can cut the pudica communis ; and as we can have no faith in there being in every fatal case of lithotomy a lusus naturæ in the distribution of the arteries, nor even in the " large arteries on the prostate," which Mr. Carpue makes, by injecting veins with glue, and which he begs leave to inform us he has been in the habit of doing for a number of years, we must suppose that there is generally some other cause of death ; and the most probable one, is the irritation caused by the lodge-ent of urine, added to the general shock produced by the operation.

This is not a new opinion. Scarpa lately wrote a Memoir on the subject, and Mr. Pattison has supposed, that, during his investigation of Scarpa's observations, he has discovered a certain fascia which will explain the cause of the infiltration of urine. As the irritation produced by the lodgement of the urine

---

* Two years ago we received a communication from a friend in Paris, informing us that, to avoid the danger of bleeding, M. Dupuytren had invented a new operation. He cut the bladder above the prostate. We recollect, at that time, that in dissecting a subject we found the obturator artery give off the pudic, which clearly demonstrated, that even this new form of incision was not free of the supposed danger. We had forgotten this plan of M. Dupuytren's until a few days ago, when conversing with a very intelligent foreigner on the subject of lithotomy, he told us, that he had seen M. Dupuytren cut seven patients in this manner ; of those, five died in consequence of lodgement of the urine between the bladder and pubes. Do these cases, in any way bear upon the question of infiltration, or lodgement of urine after the high operation ?

is probably the principal source of danger in all operations of lithotomy, let us enter fully into the question of how it is to be avoided. But we must, as anatomists, be allowed first to investigate how far Mr. Pattison is entitled to the claim which he makes, of the discovery of a new fascia connected with the prostate.

The surgeons in America are neither inclined to give Mr. Pattison the merit of correctness in his anatomy, nor the credit of having made a discovery. Dr. Jameson, of Baltimore, very clearly demonstrates that Mr. Pattison has been incorrect in his anatomy, and that he has deceived himself, in consequence of the particular manner in which he conducted the dissection. But those gentlemen are not so well convinced, that there is not some discovery ; for Mr. Pattison, in reply to one of his critics, says, " It was really and truly to me a discovery.; it was considered as such, by all the professional friends with whom I conversed on the subject in Edinburgh, London, and Paris." As he ranks among his London and Parisian friends, Mr. Cooper and M. Dupuytren, we cannot be surprised that his opponents should have some hesitation in conceiving, that those gentlemen could have allowed it to be a discovery, if it had been before noticed. Some of his critics have brought against him the work of Mr. Colles, but this Mr. Pattison answers by saying that he acknowledges in his Essay, that he believes that anatomist had seen the same fascia, although he drew no deductions from what he saw. Another opponent brings the 5th N°. of Mr. C. Bell's Surgical Reports, in which he has given a plate of the same fascia, taken from the thesis of his pupil Dr. Gardiner. To this Mr. Pattison replies, " I have not been able to obtain a sight of this number of Mr. Bell's Reports, and can say nothing of the fascia alluded to by Dr. Gardiner, but this will in no way militate against my claim, as the work quoted was not published until eighteen months after I made public, as a discovery, the prostate fascia." Mr. Pattison is here in an error regarding the date of this plate. The drawing was made in the dissecting room of Great Windmill-street, in 1813, and it was printed in the same year by Dr. Gardiner in his probationary essay, on entering into the College of Surgeons in Edinburgh. Although Mr. Pattison was then in Glasgow, he might not have had an opportunity of seeing the thesis, but it is rather curious that he should in the investigation of this subject have omitted to examine the splendid book from which the following quotation is taken, and which was published before the Memoir of Scarpa, which Mr. Pattison informs us led him to make the discovery.

" Fig. III. Plate I.—This figure exhibits the fascia which

comes down from the bladder and os pubis to cover the fore part of the prostate gland;" and in the next page, " further it is this fascia, which, being imperfectly cut across in the operation for the stone, permits the urine to lodge behind it, and thus produces abscess. The abscess forming behind the fascia, its progress is directed towards the rectum."—Engravings of specimens of Morbid Parts preserved in the Author's Collection. By Charles Bell, fol. 1813.

Mr. Pattison, after shewing that though many anatomists must have seen the circulation prior to the time of Harvey, says very properly, that since they could draw no conclusions from what they saw, that they were not entitled to the merit of making the discovery; so, " if physiological inferences are necessary to constitute an anatomico-physiological discovery, certainly surgical deductions are equally required to an anatomico-chirurgical one; and I trust that even W. will allow, that I have been the first to draw these inferences from the connections of the prostate fascia." So far Mr. Pattison is correct, in conceiving that a *discovery* will not be attended to, unless some deduction be drawn from it; but we trust he will allow, that although Mr. Bell has drawn a very opposite inference from his observations of this fascia, that Mr. Pattison will still consider it sufficient to entitle Mr. Bell to give in his claim as the discoverer of the fascia; but we believe W. (one of Mr. Pattison's opponents) was correct in saying, " in fact, these parts appear to be spoken of, both by Mr. Colles and Mr. Bell as matters of course; as things which have been long known, and to claim which as discoveries, would undoubtedly in their eyes seem ridiculous in the extreme."

Enough has now been given to entitle us to say, that the discovery of this fascia may be ranked with that of the hundred fasciæ, which were made in the groins of subjects in Scotland and elsewhere, when the anatomy of hernia was in fashion, and that it was really known to some anatomists in London, notwithstanding Mr. Pattison's assertion. " It would appear, previous to the publication of my sentiments regarding the connection of the prostate fascia, none of the anatomists in Europe, to whom I had demonstrated it, were aware that such a fascia existed, and in America no surgeon ever thought of this connection."

Let us now come to the practical question; and here we shall find a difference of opinion, to canvass which, is much more important than the title to the discovery. Mr. Pattison says, that infiltration of urine takes place, in consequence of cutting this fascia; and to establish this opinion, he gives us a diary of his thoughts on the operation of lithotomy. He tells us that, in his " boyish days," he imagined that patients died after the ope-

ration of lithotomy, in consequence of too small an incision.
We suspect that his first impressions were more correct than his
present opinions ; for he tells us, that he has come by a train of
reasoning to satisfy himself, that the safe operation, is to cut
only a very small part of the prostate, and to dilate the rest.
This opinion is founded on the idea, that by cutting the fascia
of the prostate, the urine is allowed to pass between the blad-
der and the rectum. " The prostate fascia separates the perineum
from the pelvis, and the basis of the gland remaining uncut, it
is physically impossible for one drop of urine to infiltrate into the
cellular substance which connects the bladder to the rectum ;"
founded upon this view of the anatomy, he *proposes* an ope-
ration, in which he will not cut this fascia. Had his premises
been correct, we might have agreed to his deductions, but our
dissections and experiments prove, that it is physically impossible
to extract a stone, of even a moderate size with the forceps, with-
out either cutting or tearing this inelastic membrane, which Mr.
Pattison calls fascia of the prostate. So the question will resolve
itself into this—are the parts here, to be cut or torn ? for we can
only take the term *dilatation* of the prostate, as meaning *tearing*.
We may as well speak of dilating a piece of Stilton cheese as of
dilating the prostate gland. In saying so we are aware, that we
are expressing an opinion different from that of Scarpa ; but our
observations are founded upon experiment, and upon what is
seen in the prostate of a person, from whom a stone has been
extracted. But on referring to what Scarpa has said, it will be
found that if he leaves any of the prostate uncut, it must be a
very small portion ; and by cutting according to Scarpa's plan,
the fascia which is connected to the fore part of the prostate
must be divided. Mr. Pattison uses the instrument of Mr. Peile
of Dublin, which, he says, " possesses all the advantages which
are secured in his (Scarpa's) operation, while it is freed from
all the dangers attendant on the use of the gorget." Our grand
objection to this instrument is, that it is used on the principle
of the gorget, and with as small a staff ; but the following cases
will prove that it is not so free from danger as Mr. Pattison sup-
poses. We shall not give any names, but we have reason to
believe the following to be a correct report :—

" Within the last four years, four boys have been operated
on for lithotomy, with Mr. Peile's instrument, by the same sur-
geon, at an hospital in this town. One is said to be well.

" The eldest, ———, now aged sixteen years, nine months
after the operation, which was performed three years ago, was
dismissed in his present situation ; fæces and air passing through
the urethra, incontinence of urine, the greater part of which

flows per anum through a wound made during the operation in the rectum, and which is still capable of admitting two fingers into the bladder.

"————, now aged thirteen, operated on more than two years ago, was kept in the house nine months after the operation, has been since taken in two different times, and has been there three months each time. He labours under incontinence of urine, the greater part of which flows through a fistulous opening in the perineum.

"————, aged fourteen, was operated on more than twelve months ago, since the operation, has had no power of retaining his urine."

But to return to the question of the cause of infiltration of urine. It will be evident to any who makes the experiment fairly on the dead body, that the fascia which Mr. Pattison describes, must be cut or torn in every case, where a stone the size of a walnut is extracted; so his explanation may be set aside. But the subject is one of great difficulty, when we consider the various results that occur, after operations performed apparently on the same principle. The following cases may, perhaps, throw some light on the cause of the infiltration of urine.

We were invited by a gentleman who lives about thirty miles from town, to assist him in performing an operation of lithotomy upon a hale stout man, about fifty years of age. The operation was exceedingly well performed with the gorget, and a very large stone was extracted. There was very little hemorrhage during the operation, but towards the evening a slight bleeding took place. The surgeon who had operated, was accompanied in his evening visit by a surgeon from the army, and was induced by him to put a compress on the wound, and which he fastened with a T bandage. In the morning the scrotum was found puffed up. In three days it was gangrenous, and the patient died, as one with effusion of urine, in consequence of rupture of the urethra. The cause of this effusion is so apparent, that it requires no comment, though the case furnishes a most valuable lesson.

We were the principal assistant in the operation on a gentleman, who was well known in London; his sufferings prior to the operation were excessive, and his case was rendered particularly interesting, not only on account of the manly manner in which he bore his sufferings, but also from there being a difficulty of ascertaining the real state of his bladder, in consequence of his having a stricture. There was some difficulty in introducing the staff, but the cutting part of the operation was done

with great rapidity; there was very little injury done to the sides of the wound in the extraction of the stone, as it was so sandy a calculus that it was brought away in very small pieces. The only tedious part of the operation was syringing the bladder; and he was put to bed less exhausted by the opera-tion than any patient we ever remember to have seen. There was very little blood lost during the operation. He begged to be allowed to lie upon his side; this was granted for a short time, as he expressed himself much relieved of pain by lying in that position. The operation was performed at half past three: on coming to him about nine in the evening, we found him ex-ceedingly well and cheerful, suffering very little pain. On look-ing at the wound, we were rather surprised to see no marks of blood or urine on the clothes; and we were, moreover, informed by the nurse and pupil in attendance, that no urine had passed; the patient had been lying on his back for the last three hours, having only lain a very short time on his side. Suspecting that some clot of blood might be the cause of stopping the wound, we passed the finger in, and were much astonished to find that it required considerable *boring* to introduce the finger into a wound, which six hours before admitted a large pair of forceps, ʼnclosing a portion of stone to pass. The fore finger was passed as far as the knuckle: a small quantity of blood and urine fol-lowed. It was not deemed necessary to do more, as he was not suffering, nor had he any desire to make water; and we rea-sonably enough imagined that, in consequence of the irritation of the kidney, produced by the operation, that little urine had been secreted. He was then given in charge to the nurse, with an urgent request that he should lie on his back.

In the morning visit, at eight, we were told by the nurse that, towards midnight, our patient had suffered excessive pain in the bladder, of which he was relieved about six in the morn-ing, by passing about a pint of bloody water by the penis. Through this and the two succeeding days he was remarkably well, the urine passing freely by the perineum, and he com-plaining only of a slight pain, quite on the pubes, for he put his hand on the hair of the pubes, when pointing to the part pained. This was imagined to be in consequence of having pulled the penis rather rudely on the staff during the operation, to prevent the escape of the urine. This pain was quite relieved by the appli-cation of leeches. He continued very well on the fourth day, but on the fifth, he was attacked by purging, with a very indis-tinct sort of pain in the lower part of the belly. The purging continued; he lost his spirits, and though he expressed himself as suffering no particular pain, still he said, he was sure that he

should die. He died on the thirteenth day after the operation. —The cause of his death was fully explained on dissection. There was a large abscess, containing portions of gangrened cellular membrane, between the pubes and peritoneum; this abscess being exactly similar to that produced by effusion of urine in other circumstances. What was the cause of this effusion? It may, perhaps, be thought paradoxical to say, that it happened because the operation was particularly well performed; but let us try to explain the meaning of this assertion.

The operation, according to the received notions, was very well performed. The stone was extracted quickly, and without any laceration of the parts, or any serious bleeding: but what followed? The wound was so little bruised by the extraction of the stone, that the healthy tumefaction of the injured parts became so great, that the whole extent of the wound was actually closed. In consequence of this, it required very considerable force to pass in the fore finger; this may appear to be a thing almost incredible, but we most solemnly avow that it was so. After seeing this, is it not easy to explain what took place? In the first case related, the obstruction was on the surface of the wound, and the urine was consequently driven into the cellular membrane, below the skin into the scrotum; but here the obstruction was deeper, and the urine, while it was forcibly driven into the urethra (for it came with great violence), escaped by the cut in the side of the urethra, into the cellular membrane, between the bladder and pubes, and lodging there, was the cause of the abscess.

On relating this case to a friend, he told us the following:— He had been requested to be present at an operation of lithotomy. About eight hours after the operation, he was sent for by the friends of the patient; on coming to the patient, he found him suffering such excessive pain in the bladder, that he begged that the surgeon who had operated might be sent for. The gentleman who had operated was much surprised at finding his patient so ill, and confessed he did not understand why he should suffer so much; but finding the external wound very much contracted, he most judiciously forced a catheter through it into the bladder, and thus relieved the patient by drawing off a quantity of urine. There can be little doubt, that the same consequences would have followed in this case as in the last related, had not the bladder been relieved.

If to these cases, we add the well known fact, that for the first twenty-four hours after the operation, the urine generally flows by the urethra, we shall probably come to form a correct judgment of the reason why patients die so often of effusion of urine,

and knowing this, be led to the proper means of preventing it. The most obvious cause of this obstruction to the passage of the urine during the first 24 hours, is the great swelling that takes place in the tract of the wound, and it must be evident that the less violence there is done to the parts in extracting the stone, the more healthy tumefaction will there be. How is this obstruction to be guarded against? It must be obvious, that a particular position of the patient will tend to increase the obstruction, e. g. lying on the side; but the objections to this position are so apparent to every surgeon, that no one will permit his patient to lie so, except for a short time, to relieve him from the great pain immediately succeeding the operation; for it is generally found to be the easiest posture. We recollect, while assisting to carry a gentleman into bed after the operation, that a surgeon, who operates on more patients than any other in town, checked us for not keeping the knees close, to repress the oozing of blood, He was also most particular in advising us to keep the knees of the patient together, when he was put into bed. Now it must be evident, if by this position we can prevent the blood from flowing, that we must also prevent the urine from escaping.

Is it not allowable, reasoning on these facts, to say, that the limbs may be permitted to lie apart, and thus prevent, in some degree, the chance of effusion, either of blood or urine, and at the same time afford the patient great ease. For why do we put the legs together? Is it to stop the bleeding? If so, can any one imagine that it is possible to stop a dangerous bleeding by such pressure? And if it be only an oozing, is that to be prevented? is it not rather beneficial to the patient—and that it should pass outwards; for is it not believed, that the blood being forced back into the bladder is even sufficient cause to account for death in some cases, not because of the quantity of blood lost, but from the irritation consequent upon the lodgement of the coagulum. And no one can imagine it to be of the slightest import to the ultimate closing of the wound, whether the legs be together or separate for the first 24 hours. But what is to be done, if this tumefaction is to be expected to come on, to such a degree as to close the wound, independent of the position? Can we not make a channel for the urine. Some of the older surgeons put tents into the wound; not on this principle, but rather with a view to keep to some old axioms of Hippocrates and Galen; so that, though the practice was good, it was given up, because the principle on which they did it was proved to be founded in error.

But taking a different view of the matter, would not a revival of this practice be beneficial? The tent might be withdrawn

every two or three hours; but as this would teaze a patient whom we would wish to keep quiet, would it not be better to introduce a canula occasionally, or to let a canula of elastic gum remain in the wound. What will be the objections to this? That it will be a source of irritation to the bladder : but what is the irritation of a smooth canula compared to that of the rough stone which has just been removed ; and such an instrument need not remain in longer than twenty-four hours, for after that period the urine generally passes by the perineum, for the great tumefaction is by that time generally much reduced. Although we know of no treatise in which the importance of this accident is dwelt upon, nor where the introduction of a canula or a catheter is laid down distinctly as a rule of practice, still by inquiry we shall find that it has been at all times more or less used. In 1556, Franco wrote upon the subject, and instead of agreeing with Guido and others in putting sutures in the wound to close it, still he says he seldom uses tents, although they may be necessary when the stone is small, that the parts may not agglutinate ; but here he remarks, " afin que l'urine sorte plus a son aise et si voudrois que la ditte tente soit perceè ; auterment n'y en mettre point afin qui ne face retention du sang et de l'urine." Rosset, in arguing upon the high operation, says, " I knowingly pass by the easy retention of the tube in the penis, if the urine should happen not to pass well ; which the common lithotomists are wont often to make use of, before closing the wound."

But we must be still more astonished that the necessity of introducing a canula has not been more enforced, when we see how clear Sharp is in his observations. " The first good symptoms after the operation, is the urine coming freely away, as we then know the lips of the bladder and the prostate are not much inflamed, for they often grow turgid, and shut up the orifice in such a manner, as not only to prevent the issue of the water, but even the introduction of the finger, or female catheter, so that sometimes we are forced to pass a catheter by the penis*."—p. 113.

---

* We are exceedingly happy to have it in our power to give the following example of the good effects of the introduction of the canula :—

December 8, 1820.—Henry Coleman, aged twenty-two, was cut for the stone in the Middlesex Hospital by Mr. Cartwright. The operation was very dexterously done, and the stone was extracted in less than three minutes after the introduction of the staff. The patient was cut at half-past twelve. At six in the evening no water had come away ; a canula was then passed into the bladder. In doing this, Mr. Cartwright found the opening at the neck of the bladder very much contracted. On the canula reaching the bladder, a quantity of bloody water spurted

We may now be allowed to submit, that effusion of urine is generally owing to the following causes : —

1st. That the parts at the neck of the bladder are not cut *clean*, that they are lacerated, and the cells of the cellular membrane consequently more opened.

2d. That in trying to push in the gorget, or from the bad management in the introduction of the forceps, a cavity is made in the cellular membrane anterior to the bladder, and thus a sac is formed for the lodgement of the urine.

3d. That the first incision is made too high; that there is not a depending opening for the urine to pass.

4th. That, although every incision may be correctly made, still the passage of the urine may be obstructed by the swelling of the sides of the wound.

It is very natural in this inquiry to make a few observations on the *high operation*.

When a student for the first time sees the dissection of the perineum, the distance at which the bladder is situated from the external parts, when he compares it with the appearance of a distended bladder when the abdomen is opened, he at once comes to the conclusion, that if a stone is to be extracted from the bladder, *here* above the pubes is the proper place to perform the operation. This was the conclusion which the older surgeons came to, and the high operation was that recommended, until experience shewed it to be a very dangerous ope-

---

through it, to the distance of four feet ! The instrument was left in the bladder ; the patient did not suffer the slightest inconvenience from it. The urine did not flow by the side of the tube, but came dribbling through it. On the succeeding day the wound appeared completely closed round the canula. On the third day the tube was removed, and *now* the opening appeared to be *larger* than on the preceding day, and the urine now dribbled freely through the wound ; on the fifth and sixth day some urine passed by the penis.

Excepting a slight pain in the bowels, combined with head-ache, on the third day after the operation (but which was completely removed by a purge, though leeches were applied as a preventative of inflammation), this patient has not suffered the slightest pain since the introduction of the canula, up to this, the ninth day. Some of the urine still passes by the wound, although a very large quantity passes by the penis. The whole progress of this case entitles us to say, that it may be considered as one of the most successful on record.

We are happy to see that our opinions are strengthened by the authority of Dr. Physick, who has shewn so much ingenuity in many points of surgery. He says, that of late he has been in the constant habit of introducing a piece of canula into the wound, and since he began this practice his success has been much increased.

ration. Without bringing forward facts to prove this, we think it will be allowed to us, that there must have been some very strong circumstances against this apparently simple operation, which induced surgeons to give it up for an operation which to the unexperienced must appear very difficult. It is the same view of the bladder, which those who advocate the operation in our days take, forgetting that every thing is different in the living body, and particularly when a bladder has been irritated by a large stone. When such anatomists bring forward their arguments, no wonder that the practical surgeon laughs at them. There are two sets of men in our profession, anatomists, or rather dissectors who are not surgeons, and surgeons who are not anatomists. They are nearly on a par.

The high operation was given up by all the best surgeons in Europe, except in very particular cases. It has been attempted to be again introduced into this country, by a surgeon who saw the operation performed in Paris, three years ago, by M. Souberbielle. The same surgeon has since given us a book upon this operation, in which he displays great naivete in writing. Although he gives us a history of lithotomy, and in the course of the book gives us a full description of Frere Cosme's operation, and the instruments used in it, still he tells us in his introduction, " he now passed along the director (an instrument that had something of the form of a catheter), which was held by an assistant. It is not possible for any one to conceive my astonishment ; I could not comprehend for what purpose this was introduced." This honest burst, shewing his ignorance of the common *sonde a dard*, may give some idea of the depth of this surgeon's information on the operation of lithotomy, prior to his visit to Paris. Though this allusion may appear invidious, still it is necessary for us to shew, that if the high operation is to be recommended in *all cases*, that the recommendation should come from a surgeon who is well versed in the history of the operation.

We performed the high operation on the dead body in Paris, in 1814, when discussing the merits of the various operations of lithotomy with M. Beclard, then Chef des Travaux Anatomiques. But on returning to London, we never dreamt of describing this operation as a novelty, for we knew well, that the high operation, according to the plan of Frere Cosme, had been a regular operation in *particular* cases, in Paris, for many years. We were introduced to M. Souberbielle, by Sir Wm. Crichton, then at the head of the Russian Staff. At that time M. Souberbielle was not reckoned, by the surgeons of Paris, a *regular man;* and this excited our curiosity to see one of the

descendants of the itinerant lithotomists. We unfortunately forgot the hour at which we were engaged to see M. Souberbielle operate ; but, according to our friend Crichton's report, the operation was begun with the intention of finishing it in the perineum ; but on finding the stone very large, the operator said, " ma foi, c'est bien grande, il faut la faire en haut ;" and then he finished the operation by cutting above. We were then led to believe, that Souberbielle performed the high operation only in particular cases.*

---

* A few days ago we received the following letter from M. Breschet, the Chef des Travaux Anatomiques in Paris, a Gentleman whose researches upon Hernia we have already had the pleasure of laying before our readers. We are sure we cannot offend him, by making use of this hurried Note, as we have already shewn in former Numbers, to what a depth he has carried his investigations into some of the most interesting points of Surgery :—

" Faculté de Medicine de Paris, 18—9tre, 1820.

" Je me fais un vrai plasir de fournir à M. Shaw les renseignments qu'il me demande, seulement Je regrete de n'avoir que peu de chose à lui communiquer.

" Depuis l'ouvrage de Frère Cosme et celui de son neveu Basilhac aucune monographie ou traité particulier n'a eté publié en France sur la taille Hypogastrique ou haut appareil de la Lithotomie.

" Celle Methode Operatoire est employé quelquefois mais rarement par les grands practiciens de Paris et lorsqu'ils l'emploient c'est qu'ils jugent la pierre trop volumineuse pour etre extraite par la taille lateralisiè, presque toujours ils font d' abord la taille lateralsie, puis ils font la taille Hypogastrique, cependant chez les femmes ils font de suite la Lithotomie par le haut appareil,

" Il est à Paris une personne que si dit petit neveu de Frère Cosme et qui fait frequemment la taille Hypogastrique il suit en tous points le procedé de sou Parent, il a meme conservé jusqu'aux instruments les moins utiles—c'est M. Souberbielle.

" Dans les derniers temps, depuis la publication des traités de Medicine operatoire de Lassus, Sabatier et du traité de Deschamps sur la Lithotomie, il y a quelques perfections introduits dans cette branche de l'art.

" 1.—M. Dupuytren a publié lors de son concours pour une chaire de Medicine operatoire a la faculté de Medecine de Paris, une *Dissertation* sur la *Lithotomie,* Paris, 1812.

" 2.—M. Sanson Clérc de M. Dupuytren a donné pour son Doctorat une thése sur un nouvelle methode de pratiquer la Lithotomie—Il arrive a la vessie par l'intestin rectum, Je crois avoir envoyé cetté dissertation a M. Shaw, cette methode a eté mise en pratique en France et en Italie, Je sais que dernierement Vacca Berlinghieri l'a pratiquee avec succes.

" 3.—M. Dupuytren a proposé, Il y a quelques années une nouvelle methode de Lithotomie, il interesse la vessie en haut et en avant, et fait son incision exterieure sur le raphè—cette operation est decrite dans l'ouvrage qui a pour titre.—*Histoire*

It will not be denied, that before a surgeon is entitled to condemn the lateral operation, that he must be acquainted with the anatomy of the parts which are cut in this operation. We shall not hypocritically say, that we are sorry to bring forward proofs from the same author, of his having at least a most extraordinary idea of the anatomy of the perineum, for we wish, in as strong a manner as possible, to shew the erroneous data upon which some imagine the lateral operation to be condemned—and in its stead, a most dangerous one proposed. It will not be necessary in proof, to quote the whole of pages 134 and 135, in which the author says,—" Before we consider what is done in the lateral operation, it is necessary that we should understand the situation of the bladder and its connections." " If, for a moment, we consider the situation of the bladder and the parts connected with it (such as the levatores ani, the obturatores interni, the coccygian muscles, the muscles from the rami of the ischium), we shall find that those muscles act on a part (i. e. the bladder) which is but slightly attached to the pubes by cellular substance and by the lateral ligaments. These I find, by repeated dissections, are seldom the same in different subjects. I say, if we consider the action of these muscles, the situation of the bladder must vary under different circumstances."

Now, we boldly ask, does any one who ever dissected these parts, either as a tyro, or in the investigation of the surgery of the part, imagine that the most convulsive action of the coccygeus, or obturator, which is not only separated from the bladder by a strong dense fascia, but is inserted into the femur, can have the slightest action on the bladder ; or did they ever see them " as the parts connected with it ?"

---

et description de la taille laterale suivant la methode perfectionee par Chesselden, &c. *traduit de l'anglais par* M. H. *Guerin suivie d'une methode nouvelle pour la taille trouvee par* M. *Dupuytren,* 1818.

" 4.—On a aussi publié des Memoires sur la Lithotomie Vaginale ; M. Clemot de Rochefort et M. Flaubers de Rouen ont donné des observations.

" 5.—Je ne vous parle pas de l'ouvrage de votre compatriote M. Carpue, il est, connu, jugé, et condamné par vous et par nous.

" 6.—J'ai appris que votre ami M. Cross s'occupait d'une travail sur le même sujet—mieux que moi vous devez savoir ce qu'l en dit.

" Voila mon chere confrere ce que Je sais sur le point de chirurgie pour lequel vous me faites demander des renseignements, si je puis vous être agréable en tout autre point J'y suis egalement disposé. " G BRESCHET.

P. S.—" Je sais que M. Souberbielle prepare un ouvrage sur le haut appareil mais il n'a pas encore paru."

We shall only give one other striking instance of the anatomy :—" Hemorrhage,—a branch of the internal pudical artery, which is ramified upon the prostate, and the ramifications of which are as various as those of an oak, is frequently divided by the gorget, the bistoure-cachee, and the knife ; and I have known several patients die of the division of this artery." In a foot-note he says, " a branch of this artery is sometimes wounded on withdrawing the gorget." In our dissections, which we may number at some hundreds, excepting once or twice, we never saw an artery of any importance on the prostate gland ; that is, they were very numerous and small, and these we know are not the arteries to cause a dangerous bleeding. We have found, in two or three instances, the pudica communis pass along the prostate ; and Dr. Barclay, who has collected every fact relating to the variety of arteries, mentions only three instances of this kind. Is it probable that the " several patients," whom the author has known to die in consequence of the division of this artery, had the misfortune to have both stone, and this very unusual distribution of the arteries ? Is it not more probable that *if the patients did die of hemorrhage,* that it was in consequence of the pudica communis being cut, either in the forcing in, or in the withdrawing of the gorget ? This we suppose must be the vessel the author means, when he says, " a branch of this artery is sometimes wounded on withdrawing the gorget."

The whole contents of the book have such an air of honesty, that we are perfectly satisfied the author supposed he was correct in what he wrote, and we believe that he has seen vessels of a very considerable size on the prostate, but that the vessels he saw were veins, not arteries ; and he has probably been led into this mistake in consequence of using the glue injection, which all those accustomed to make preparations, know, finds a very easy passage into the veins. " In the course of my dissections and demonstrations I beg leave to observe, that I have been in the habit of injecting with glue, for a number of years, *every subject* that I have dissected." —p. 151.

We shall not here enter farther on the anatomy, we shall only remark, if this author believes that the danger of hemorrhage is from cutting the prostate, (p. 150.) what are we to think of the wonderful escape of the thousands who have had it cut ?

Let us now examine how far the reasoning of the same authority would induce us to perform the high operation. We shall not argue fully upon the whole advantages, which he enumerates

as to be derived from the high operation, but we shall shortly state them.

Advantage 1st. " Because it is generally performed in less time." This has not been the case in London.

2d. " There is less pain." That may be a question.

3d. " There is no fear of a fatal hemorrhage." We have already shewn his fears of hemorrhage to be founded in error ; we shall only add, that the instances of the pudic artery running over the fundus of the bladder, from the obturator, are more numerous, than of the artery running along the prostate.

4th. " There is no division of the prostate, nor of the inferior part of the bladder, nor is there any danger of wounding the rectum." This has been already sufficiently argued in the first part of this paper.

5th. " A stone, if of a certain size, cannot be extracted by the lateral, but may be extracted by this method." This is allowed to be *perhaps* one of the proper cases ; but it is a question whether in this desperate case we ought not rather to try and break the stone, and then extract the portions by the lateral operation.

6th. " If the stone breaks, the particles can be extracted with greater ease than in the lateral operation." Does any other surgeon think so ; and was not the difficulty of extracting the small portions, one of the principal reasons for abandoning the operation?

7th. " If the stone is concealed in a cyst, the cyst can be destroyed, and the stone extracted, as in Sir E. Home's case ; there is also no danger of including part of the bladder with the stone, nor any danger of a fistulous opening after the operation." The latter part of this is not worth arguing, and it is a pity that an argument of so much importance should arise from a statement such as the first part of the paragraph ; we shall not enter upon it fully, but put these queries: Is it generally necessary from the train of symptoms to operate where the stone is encysted ? If a stone is concealed in a cyst, can it be easily felt with the staff ? Will there not be at least some sensations conveyed in sounding, that should give the operator an idea that the stone is in a cyst ; and were he suspicious of it, would he not say so before he commenced his operation ? How many patients have died since the commencement of the practice of plunging the gorget, with what are called encysted stones, and how many examples of these cysts have been preserved and shewn publicly ? We shall answer this, we have seen some where the cyst was the bladder unopened. How often did Chesselden, or Rau, send their patients to bed, saying the stone was encysted ; and how often has this occurred in modern times ? Does not the driving the bladder before the gorget, mentioned in the early

part of this Essay, account for some of the *cysts* ? What can the author mean " by destroying a cyst ?". Does he not know that the cyst is always on the outside of the bladder, and that if it is destroyed another wound must be made in the bladder ? But neither our wishes, nor our limits, will permit us to enter farther into this subject at present.*

8th. " In case there should be any disease of the bladder, it can be examined, and proper means prescribed for the cure." We confess, we have not the slightest idea what this can mean.

9th. " In patients where the staff cannot be passed in consequence of stricture, or disease of the prostate, or where the calculus is of a certain magnitude, there is no choice of the mode of operating ; either the high operation must be performed, or the patient is doomed to linger out a life of wretchedness." This truly is a desperate case ; but it strikes us that the only way of being satisfied that there is a stone in the bladder, is by sounding. Would we make an opening into a man's belly, because he had the symptoms of stone ? Might it not be an ulcer, or an abscess at the neck of the bladder, &c. &c. ? Then if we can sound him, we may cut him by the lateral operation.

Thus far we hope we have treated the matter fairly, and if any thing is wanting to substantiate the argument with which we

---

* It would appear, that in all ages the common excuse for not extracting a stone has been, that it was enclosed in a sac ; for Rosset, in a very curious Treatise on Lithotomy, printed at Paris in 1590, commences one of his chapters with this head. " It is a crafty device to say, that the stones in the bladder are covered with skins." When portions of the bladder were pulled away with the stone, he says, " for it does not seem that any of those membranes, which those impostors (with the leave of the honest and skilful operators be it spoken) put upon us, are different from the solid body and substance of those bladders that are found in the bodies of them that are newly dead." " Besides, what need would there be of cutting the bladder if the stone were invested by a membrane ; for the membrane by its smoothness would prevent the stones sticking and rubbing against the bladder, and consequently would abate the pain, which nevertheless is intolerable, as is plainly evident from this alone, that it forces the unhappy persons who are thus afflicted to run, in spite of their teeth upon this hazardous way of cutting. But this one thing particularly (they themselves being judges), is a plain proof of its being a lie, by which they excuse their killing of mankind. Every stone which they extract uses, before they extract it, to be perceived by the sounding noise the catheter makes on the stone ; for if that be not heard, they never attempt extracting it. But no stone invested with a membrane can be perceived by that sounding noise of the catheter against it, for the membrane intervening hinders it. Therefore no stone invested with a membrane, is ever extracted by them, whatever they may prate to the contrary."

set out, we shall say that this author has not said one word of the danger of wounding the intestine, when the bladder is small ; not one word of the danger of wounding the colon and rectum, should they adhere to the fundus of the bladder in consequence of inflammation. The wounding of the peritoneum, he treats as a very trifle. " Though this accident is not attended with any danger, it embarasses the surgeon."

By studying the anatomy of the pelvis, and by comparing the deductions which we draw from it, with the observations of those authorities who have written upon the subject, and by witnessing the performance of the operation on the living body, we are fully convinced that the high operation is, in the greater number of cases a most dangerous one ; still, when we look to what we have written, we see that it may be supposed that some of our arguments may have been strengthened by the weakness of the modern advocate for the operation. For this reason, we are desirous of meeting the question fairly, and this we hope to have an early opportunity of doing, as we have been promised a Memoir on the subject by the venerable Scarpa. At present we shall only make a few remarks on the alleged superiority of the present mode of operating over that followed by the older surgeons.

1. It is *now* argued that the danger of the high operation consists in previously injecting the bladder, and it is, moreover, said, that if we operate on a full bladder, that the case is necessarily fatal. Why this should be, we cannot imagine ; but in answer to the assertion that the injection of the bladder is very dangerous, we have to remark, that Chesselden injected the bladders of the nine boys, whom he cut successfully ; and that in the greater number of the cases prior to the time of Frere Cosme, this plan was followed. The objections to the injecting of the bladder are conveyed, in all the treatises on this subject, in a very vague manner ; and as for the bursting of the bladder, we should suppose it very improbable that any surgeon in his sober senses would use so much force as to burst one, and particularly a bladder where the coats were thickened by the irritation of the stone.

2. That now the catheter is introduced by the urethra, which prevents the urine flowing by the upper opening. In answer to this we say, that Frere Cosme invented the cut in the perineum, because he found that though the catheter was passed, still pus and urine were lodged in the cellular membrane, above the bladder. It is a little extraordinary that it should be argued, that the catheter in the urethra should carry away all the urine, and prevent any coming from the upper opening, when it has happened, that even though a canula

was in the depending part of the bladder, that still the urine has passed by the upper opening.

3. That though the bladder may be small and contracted, that it may be projected above the pubes by the sonde a-dard. Upon this M. Dupuytren, in his " Lithotomie," remarks, that there is great difficulty in introducing a sonde a-dard, between a large stone and a thickened bladder. We have seen cases where the bladder has so closely invested the stone, that this part of the operation must have been almost impossible; for in one case the operator found that he could not introduce *a staff*, farther than into the neck of the bladder. In this case there had been for a long time incontinence of urine; and here we may remark an error into which not only the older surgeons, but a modern one has fallen, in calling a bladder thickened by the irritation of the stone a *scirrhous bladder*. Were an operation above the pubes, for the extraction of a large rough stone, where there had been great irritation, to be fatal, we have no doubt that we should hear that the cause of the patient's death was a scirrhous ulcerated bladder, and we should have it *proved* by a *sectio cadaveris*.

4. It has been said that it is easier to get at the stone by the high operation. We have measured the distance (in a stout but not a fat man), from the cut in the linea alba to the part of the bladder behind the prostate, where the stone generally lodges, and found it to be more than six inches; in the same man, the stone could be touched from the perineum by the forefinger, the distance not being four inches. Here we may add one of the arguments against the lateral operation, which is rather amusing; " but the grand and insurmountable objection to the lateral operation is, *that we are operating in the dark*." This infers that we are operating in the light, in the high operation, but *our* eyes are not quite so well adapted for looking into such a bloody pit as is made in the high operation, as to see all that is going on there, or even to examine a disease and prescribe for its cure. See 8th reason for preferring the high operation.

In conclusion we may remark, that there are not many successful cases on record, where the stone has been very large. Frere Cosme himself allows that in many cases the operation is the direct cause of peritonitis, even without epanchment d'urine dans le Peritoine—and also, that it causes abscess in the cellular tissue of the pelvis—que ces absces tiennent aux dechirures et aux desordres produits par l'operation ou a des infiltrations d'urine. This we must consider the grand objection, for with proper care we may avoid wounding the peritoneum; but, if infiltration of urine, or abscess take place, we have no means

of making a channel to prevent its spreading among the loose cellular membrane between the peritoneum and pubes.

We of course can have no experience in this accident, and must trust to the evidences of history, which cannot be *all* wrong. We know that two patients have been operated on in London by the high operation, and have not died; but these were young and healthy lads, where the stone was small. In such patients, we know that the healthy inflammation will very quickly form a channel from the wound in the bladder to that in the skin; moreover, there is a fact entirely forgotten by the modern advocates of this operation, that the anatomy of the bladder in boys is very different from that of adults—that it lies much higher, and it was perhaps this which led all the old authorities to say, that this operation was almost inevitably fatal after the age of thirty.

We may sum up by saying, that all the accidents which are generally assigned as the reason why patients die after the lateral operation, are more apt to take place after the high operation; we need only particularize inflammation of the peritoneum, and infiltration of urine.

We have to apologise for the length of this article, and for the form which it has taken. We commenced it in the hope of being able to impress upon our readers, the necessity of the drawing off the urine by a canula, after the lateral operation; and in the expectation, that the facility with which the lateral operation with the knife may be performed, when a large staff is in the bladder, would be so evident, that surgeons would be convinced, that it was really an easier operation than that performed above the pubes. May we hope that we have proved that much of the danger incident to the lateral operation, may be obviated by the use of the canula. It was impossible in an Essay of this kind, at the present moment, to avoid touching upon the question of the high operation; and we trust we shall be believed when we say, that the inquiry into the merits of the proposal for the renewal of this operation has been a most unpleasant task—it has been forced upon us by the consideration of its importance, and by our desire to protest against the opinion which prevails in London, that the high operation is the one now generally recommended in the west end of the town.

[The following note was sent to the Editor with this Essay:—

Albany, Dec. 10, 1820.

" Dear Sir—I think you will agree with me, that *I ought* to acknowledge myself to be the author of this paper. Your's truly, " JOHN SHAW."]

ART. IV. *Considerations et Observations Anatomiques et Chi-*
rurgicales sur la Formation, la Disposition, et le Traitement
des Fistules Stercorales et des Anus-contre-nature.   Par
Gilbert Breschet, Docteur en Médecine, Chef des Travaux
Anatomiques de la Faculté de Médicine de Paris, Premier
Aide de Clinique à l'Hôtel-Dieu, Professeur particulier d'Ana-
tomie et de Chirurgie, &c.   1 iere. Partie, à Paris, 1820.

(Not yet Published in the Original.)

[Communicated through Dr. JAMES JOHNSON.]

ALTHOUGH many authors have written on the subject of arti-
ficial anus, and several men of great talent have published some
curious observations on the formation of this disgusting infir-
mity, yet none have given a certain method of cure. Even
Desault, in the examples of a radical cure, which he has left us,
adopted a proceeding which proves, that he was not acquainted
with all the varieties of the disposition of the parts of this
organic lesion, and the mechanism of its cure. Pressure has
nevertheless been productive of successful results, though in a
manner totally different from that supposed by Desault; and
in this occurrence the success he obtained was less the result of
deep reflection and a perfect knowledge of the circumstances,
than a happy accident. The method he employed does not
however deserve the criticism that Scarpa has made upon it;
and even if in most cases it be defective and insufficient, yet in
others it may serve to perform the cure altogether, or to com-
plete and assist the operation of other methods. Desault has
however performed a real service to science, by removing the
prejudice which prevailed in the schools, of the incurability of
the artificial anus. The only circumstances in which he is want-
ing are his imperfect knowledge of the true mode of action of the
method he employed, and the inconsiderable number of cases to
which it is applicable.

If we judge of the ideas of Desault on the subject of artifi-
cial anus, by what Bichat has related in his Surgical Works, we
see that he was not ignorant of the manner in which the two
ends of the intestine were disposed; and whether he gained
the information from the perusal of the Memoir of Morand, or
from dissection and clinical observation, he knew that an angle
exists, formed by the two portions of intestine, at the place of
their division, which presents an obstacle to the passage of the
contained matters, greater in proportion as it is more acute;* so

---

* Desault's Surgical Works, Vol. II. p. 355.

that if the two portions are nearly parallel, all access to the lower is interrupted, whilst the contents escape in part from this side when it approaches the perpendicular position. The first disposition is most frequently observed, when a large portion of the intestinal canal has been destroyed, and when it has been cut across. The second is principally found when the section has only partially divided the parietes of the tube. It is obvious that the difficulty of cure is in a direct ratio to the one, and an inverse ratio to the other; and that the projection of this sort of internal band always proves a more or less powerful obstacle.

In explaining the indications which he considers necessary to obtain the radical cure, he gives proofs of the same knowledge and sagacity of observation. These indications are three in number. The first is to return the intestine into the abdomen, when it has escaped from it by invagination. To supply in some manner the want of continuity in the abdominal parietes, in order to prevent by this means the issue of the contained matters through the fistula, to force them to pass towards the anus, to accustom them to this course, and to give to the external opening the opportunity of closing (the cicatrix of which then replaces the portion of intestine which has been destroyed), form the second indication; and the third consists in removing the obstacles which might oppose themselves to the free passage towards the inferior extremity of the intestinal tube. If the knowledge of the indications always sufficed for the treatment of diseases, we should feel astonished that Morand and Desault, and after them Messrs. Benjamin Travers, William Lawrence, Astley Cooper, and all the other authors who have written on hernia and wounds of the intestines, should not have discovered the means of curing the artificial anus. But in medicine, it often happens that nothing is more difficult than to find the means of accomplishing an indication.

It seems that Desault did not know all the difficulties presented by the indications he mentions; and what he says of the tents introduced into the two ends of the intestine—of the tampoon, which he considers as adequate to fulfil his third indication—as well as of the points of suture to obtain the union of the abdominal wound, and close the external opening—proves that he had seen but a small number of cases of artificial anus, and that he had not thrown on this subject the light of his genius.

He pretends that by his tampoon we attain the double advantage of opposing the eversion of the intestine, of closing the fistula exactly, of preventing the matters from escaping, and of forcing them to pass towards the anus. He says, however, and this observation of deep importance, worthy the talent of Desault,

is, " that the obturatory tampoon only assists the cure secon-
darily; it is but an accessary measure." " Its use here is to
determine the course of the alimentary matters downwards; but
that it cannot accomplish this if an intestinal obstacle be met
with." This obstacle is the angle formed by the two ends of
the intestine, a disposition that Morand had already pointed out.
Desault thought that the angle thus formed might be removed
or made less acute.

To accomplish this object he varied the means according to
the nature of this obstacle, and the degree of its opposition.
The angle formed by the two portions of intestine was rendered
less acute by introducing into the two openings long tents,
which widened the diseased part, and facilitated the course of
the matters contained. By degrees the two portions of intes-
tine, which were adherent, and consequently parallel to each
other, separate; the angular projection diminishes, and is more
and more effaced; so that at last the two ends of the intestine
so far correspond, that the alimentary matters may pass from
the superior into the inferior.

When things had proceeded so far, the internal angle being
almost totally effaced, Desault removed the long tents placed in
the intestine, and only employed the tampoon, taking care that
it should not penetrate too deeply. He considers his proceed-
ing as very advantageous; and states, that when methodically
employed, it leads to two results. By its use, in the first place,
the intestinal gases begin to enter the lower extremity, the fæcal
matters themselves soon follow the same course, and the state
of the patient is ameliorated. Desault prefers his own proceed-
ing to the suture; for by the use of the tents, and of the tam-
poon, according to the results obtained, we may continue or
suspend the employment of the measure, which is not possible
when the suture has been put in practice.

This practice of Desault is doubtless a natural one; but
whilst we approve the proceeding of this celebrated surgeon, let
us remember that it is for the most part inadequate; and that in
the greater number of cases, its good effects are confined to
giving relief, without producing a radical cure. Desault him-
self allows, that his method fails if the internal angle be too
acute; if the two portions of intestine, applied to one another in
a parallel manner, have become adherent; and if they are also
connected by their extremities to the surrounding parts. He
confines the employment of his method to the case of simple
lesion of the intestine, without loss of substance, and where
there exists a simple fistulous opening. At the same time he
allows, that there are no certain means of distinguishing this

from all the other lesions that the intestine may present, and in the treatment of which his proceeding would completely fail.

Although surgery owes much to Desault, we must confess, that in the treatment of artificial anus little is due to him, except for his attempts; and that the results he obtained must be considered as having done little to advance the progress of the art. His proceeding can only be considered as a palliative applicable in the smaller number of cases.

From the time of Desault to Scarpa, no progress had been made in the treatment of the artificial anus. It was necessary either to expect every thing from nature, which sometimes brought about a spontaneous cure, or to retain an infirmity scarcely preferable to death. Several instances of these spontaneous cures were known. The writings of La-Peyronie on herniæ with gangrene, those of Louis on strangulated hernia, both inserted in the Memoirs of the Royal Academy of Surgery; the works of Jean-Louis Petit, and of Sabatier, contain a great number of remarkable facts upon this point. But before Scarpa no one had shewn the process which nature employs in bringing about this happy event.

Formerly it was thought that the separation of the gangrenous portions having taken place, the ends of the intestine remained gaping, and contracted adhesions with the edges of the external wound; and that by the successive diminution of the diameter of the fistulous opening, the edges of the wound ultimately came in contact, and united; whence resulted the occlusion of the artificial anus. This explanation had been given rather from what it was thought must happen, than from what had been observed. The position of the two extremities of the intestine is not that which we have just indicated, and their orifices are far from corresponding to, or being more or less directly opposite, one another. Simple inspection shews that Morand has perfectly described the relations of these extremities of the intestine : they form with one another an angle almost always acute, and frequently they are applied to each other, so that the two portions have a parallel direction. The end corresponding to the stomach has its orifice open ; is directed towards the wound, into which it pours the excrementitious matter, whilst the portion which is continuous with the rectum, is raised a little in the cavity of the abdomen, and through its lessened calibre nothing for the most part passes, or only some mucosity.

The fæcal matters then never pass from one extremity to the other without flowing into the external wound, or an intermediate cavity, of which we shall speak. The difference of calibre in the two ends of the intestine, and their parallel course op-

posing itself to their direct inosculation, presented to Scarpa a
difficulty so great, that the explanation of it which was adopted,
and which we have just related, appearing to him inadmissible,
he was compelled to seek another, which he wished to find only
by the observation of nature.

A young man, affected with congenital hernia, experienced
all the symptoms of strangulation ; gangrene supervened, and
the tumour being opened, a loop of sphacelated intestine was
separated and removed.   In about six weeks after the operation
the wound had almost entirely closed. He died the following year
from the results of various excesses in regimen. The opening of
the body shewed an effusion into the abdomen, which had pro-
ceeded from a bursting of the superior part of the ileum, a little
above a point where this intestine adhered to a prolongation of
the peritoneum, which had originally formed the neck of the
hernial sac.   The superior part of the intestine, that which cor-
responded to the stomach, had in some places a diameter three
or four times greater than in its natural state ; the inferior, on
the contrary, from the point of adhesion to the rectum, was
much contracted, and its orifice seemed to be drawn backward.
These two portions were united behind the inguinal ring, form-
ing a very acute angle. A membranous sac adhered very closely
to this angle of the intestinal canal, and at this same point
formed a funnel-shaped prolongation, of which the base corres-
ponded to the intestine, whilst the summit, passing through the
inguinal ring, became continuous in the groin with a narrow
fistulous tract, and opened externally by a very small orifice.
It cannot be doubted that the funnel-shaped membranous pro-
longation had formerly constituted the neck of the hernial sac,
for it was evidently continuous with the peritoneum, and its
texture would not admit of its being confounded with the
cellular tissue of the groin. The two orifices of the intestine,
instead of approaching to, and inosculating with one another,
as is commonly thought, had remained close together on the
same line, and between them had formed an elongated emi-
nence, directed forwards, which alone would have sufficed to
hinder the direct passage of the fæcal matters from the superior
to the inferior extremity.*

Scarpa affirms that the artificial anus would not be cured, if,
as was formerly thought, the two ends of the intestine separated
by gangrene, should contract adhesions to the edges of the.

* De la Hernie avec Gangrene, p. 258 et suivants.   Traité pratique des Hernies,
par Scarpa.

opening through which the hernia had taken place; and also, that this cure would not happen, if the two ends of the intestine, of which a loop has been detached by mortification, adhering to the circumference of the sac, as constantly happens (and from which results the impossibility of effusion of their contents into the abdomen), did not retract in such a manner as to leave a sufficient extent of the remaining part of the sac, to form an intermediate cavity between the two portions of intestines, which cavity he calls the membranous funnel. He assures us that this fact is entirely his own, and that it had not been discovered by Morand, or Pipelet, who have written on this part of surgery.

According to Scarpa, a great difference exists as to the curability of the artificial anus arising from wounds of the abdomen, and that which succeeds to herniary tumours. In the first case, the divided intestine, destroyed either wholly or in part, not surrounded or preceded outwardly by a process of peritoneum, which in a hernia constitutes the sac, no membranous funnel can be formed; the fæcal matters having no intermediate cavity by which to pass from the superior to the inferior extremity of the gut, continue to flow through the fistulous opening, and thus perpetuate the artificial anus. The Italian professor ranks with this case umbilical and ventral hernia; in these it is true a sac exists, but united to the surrounding parts, by a cellular tissue, so compact that this adhesion does not admit of its mobility and retraction, nor consequently of the formation of the infundibulum, which should receive the contents of the superior, and transmit them to the inferior portion of the intestine. The mobility then of the hernial sac, or its loose adhesion to the parts on which it is placed, is a circumstance of importance, in order that the sac and extremities of the intestine may be retracted; from which result the formation of the infundibulum, and the re-establishment of the course of the fæcal matters between the two ends of the gut. A ligature passed through the mesentery, by hindering this retrograde movement, must also oppose the efforts of nature to cure the accidental anus, and thus become not only useless, but even prejudicial. With what intention was this thread placed? To prevent the effusion of intestinal contents into the abdomen, by the retraction of the extremities of the gut.

If the observations of authors on these cases are examined with attention, it will be seen, that effusion into the abdomen has occurred only when imprudent operators have used force in drawing the intestine outwards; when, by their want of skill, they have destroyed the adhesions of the intestines to the neck of the sac, or other parts, whether for the purpose of ascertain-

ing its state at a point more deeply situated, and to separate the
parts between it and the ring, or the arch ; or when, without
separating the adhesions, they have made a division after the
method of Arnaud, and have carried this division too far, that
is to say, beyond the adhesions which have already formed when
gangrene commences.

Scarpa establishes a marked difference between those cases of
artificial anus, succeeding a penetrating wound of the abdomen
with protrusion of the intestine, whether a part of this canal has
been removed by gangrene, or whether there be a simple divi-
sion of the whole, or a part of the intestinal cylinder. The cir-
cumstances in the two cases are not in the same condition. In
hernia the extremities of the intestine are inclosed in the portion
of the peritoneum forming the sac, which serves for the pro-
duction of the membranous funnel ; whilst, after the mecha-
nical division of the intestine, the ends of this organ not being
surrounded in the same manner by the peritoneum, or this
membrane being closely united to the parts in the neighbour-
hood, no retraction takes place, and the funnel not being formed,
the anus becomes incurable. The intestine adheres to the edges
of the wound, and the excrementitious matters from the upper
end arriving directly at the surface, without being received into
a cavity intermediate to the two extremities, pass altogether
through the wound, and flow outwards. According to the Pro-
fessor of Pavia, the possibility or impossibility of the radical
cure of the artificial anus depends on the greater or less facility
with which the ends of the intestine can be retracted into the
abdomen, and on the formation of the membranous funnel.
Similar to the consequences of penetrating wounds of the abdo-
men with lesion of the intestine, are those of ventral herniæ
taking place through the cicatrices of wounds of the abdomen,
long since healed, when these herniæ happen to mortify. He
considers ventral and umbilical herniæ, although possessing a
sac, as being in precisely the same state when they are attacked
by gangrene. The artificial anus succeeding these cases cannot
be cured, because the sac has always contracted intimate adhe-
sions with the aponeuroses of the abdominal muscles, and the
cellular tissue under it being very short and dense, does not
allow of the degree of mobility indispensable for the cure.
What Scarpa says on the formation of the membranous funnel,
may in some circumstances be true, but it is certain that in
many cases nothing like it is seen, and that in inguinal and
crural herniæ the ends of the intestine have been found adhe-
rent to the edges of the wound ; all the fæcal matters passing
outwards, the lower extremity receiving none of them ; nothing

passing by the anus, and the artificial one remaining open till removed by the appropriate measures we shall point out.

The reflections he makes on the advice of La Peyronie, to confine patients affected with artificial anus to a rigorous diet, agrees with what practice every day teaches, and with what M. Dupuytren has several times observed. Louis had before Scarpa opposed the ideas of La Peyronie on this point. He pretends that a rigorous diet, by causing the speedy closure of the external wound, and of the opening in the intestine, cannot contribute to a perfect cure; but that, on the contrary, it is frequently the cause of the colics to which the patients are subject during the whole of the cure; and that, particularly after the cicatrization of the wound, so far from keeping the patients on a low diet, we should give them such aliments, as, by their passage through the intestinal canal, may keep it adequately dilated, and prevent its coarctation. Substances easy of digestion, slight minoratives, or laxative clysters, to facilitate the course of the alimentary or fæcal matters, will here assist the treatment, and accelerate the cure of the disease. We do not, however, coincide in the opinion of Scarpa, who says that there is good reason to hope, that in a short time the fæcal matters will depress the projecting eminence, which results from the curvature of this canal, and will resume their natural course along the side opposite to the opening. Scarpa here only considers the case where gangrene has not destroyed more than a third of the circumference of the intestine.* In the cases where a loop of intestine has been entirely destroyed, the projection that separates the cavity of the two ends is much thicker and more projecting. Then, according to Scarpa, in order that the alvine matters shoul dresume their natural course, it is necessary that the two ends of the intestine should recede sufficiently from the wound, to allow a considerable dilatation of the base of the membranous funnel. In these cases, which, according to the celebrated surgeon whom we quote, are most frequent, it is indispensable to prescribe for the patients an abundant diet, of good quality and easy digestion, because then the intestinal canal carrying into the infundibuliform cavity, composed of the peritoneum, a larger quantity of fæcal matters will increase its size. The curved course that the fæcal matters pass through, in the first periods from the upper to the lower end, will gradually diminish and approach to a right line. By this gradual dilatation and change of position, the matters will ultimately find

---

* Des Hernies avec Gangrène, p. 280.

a direct course, and no longer tend to pass through the external opening.

Scarpa recommends to the surgeon the greatest prudence in the treatment of the artificial anus. He must not endeavour to close too speedily the exterior wound, lest the patient should experience violent colics, followed by severe and even fatal symptoms ; nor at the same time is it right to prolong indefinitely the existence of a stercoral fistula. After having given for some weeks a healthy and abundant diet, easy of digestion, after having solicited and kept up the discharges from the bowels by minoratives and laxative clysters, the wound may be gradually closed, particularly if the patient experiences no colic, and if the excretions take place in a natural manner. He prohibits the employment of compression of the fistula to assist its cicatrization, for pressure, however slight and methodically conducted, tends to lessen the capacity of the funnel-shaped cavity, and to interrupt the course of the fæcal matters, whence result colics and other inconveniences. Besides, whatever may be the precautions of the surgeon, it is known that there always remains, for several years, a small fistulous point from which weep out at times coloured mucosities, or liquid fæcal matters. In this respect the practice of M. Dupuytren perfectly agrees with that of Scarpa, and in cases of artificial anus very successfully treated after the method of the former, I have seen the little fistulous orifice long resist every effort of art, but still the cure ultimately became complete. Perhaps this little fistulous strait is a means which nature preserves, until the passages become sufficiently large and well established, as to allow the fæcal matters to traverse them, whatever be their quantity and consistence. Whatever delay or stoppage there might be to their course, the fistulous opening, by enlarging and allowing the matters to pass through, will obviate accidents and prevent stagnation, obstruction, inflammation, strangulation, gangrene, and effusion which are the results of it.

This stercoral fistula must be abandoned to itself, or dilated by a bougie or catheter of gum elastic, or even by prepared sponge, according as the fæces pass more or less freely by the lower extremity of the intestinal canal, and as it is judged by the absence or the presence of symptoms, that their course is free or difficult.

Scarpa shews by observations that the eversion of the intestine may occur, although the two orifices of the divided intestine communicate freely with one another, through the medium of the membranous funnel. This accident takes place, not only in the first periods of the restoration of the intestinal canal,

but even at the end of several years, if a small fistulous orifice be formed in the centre of the external wound. In such circumstances it is proper to reduce the intestine so everted, and to keep it in position by means of a tent of lint, which is to be gradually diminished until the fistula completely heals ; and if this fistula, from its peculiar organization or disposition, should present no disposition to contraction, in order to prevent a return of the eversion, the tent should be permanently retained, taking care to change it frequently, and keep it in position by means of an appropriate bandage.

It sometimes happens that long after a cure, obtained by the proceeding of Scarpa, symptoms manifest themselves not less intense and formidable than those of a strangulated hernia, placing at once the patient in a state of great danger, and the surgeon in much embarrassment. The acute pain in the vicinity of the stercoral fistula, the tension of the abdomen, the weakness and smallness of the pulse, the constipation, hiccup, change of countenance, and general sinking which occur, sufficiently point out that some new obstacle has arisen to the course of the fæcal matter ; and all the circumstances render it probable that the cause is seated in the funnel-shaped space, or point of union, of the two extremities of the intestine.

Frequently the surgeon loses time, which is precious, by his uncertainty, or by the employment of inefficacious or hurtful measures. Purgatives in particular, given by the mouth, can only aggravate the symptoms. Scarpa advises that in such a case, after the administration of purgative clysters, the fistula should, without farther delay, be dilated and laid open, so as to procure the evacuation of the matters which form the obstruction, and thus prevent rupture of the intestine and effusion of its contents into the abdomen.

Mr. Benjamin Travers says, when speaking of artificial anus, that the direct communications established between the cavity of the intestines and the external surface of the abdomen, by means of an accidental canal, allowing the excrements to pass, are most commonly owing to the perforation of the gut by worms or foreign bodies. In these cases, in spite of the severity of the symptoms, nature alone generally brings about a cure. In some cases, however (rare, it is true), the patients have perished from the communication of the cavity of the intestine with that of the abdomen ; whilst in others the ulceration of the integuments has produced artificial anus. The symptoms of these cases are ordinarily less severe than those succeeding to other injuries of the intestines ; because in these the matters passing out are not effused into the cavity of the peritoneum,

as happens in wounds where the opening in the intestine does not communicate directly with that in the parietes of the abdomen.

Mr. Travers relates several instances, but which he has borrowed from other authors, his own practice not having given him an opportunity of treating cases of artificial anus. This circumstance is a strong presumption against his opinion on the subject. He pretends, 1st, that the opening in the intestine preserves the same relation to the opening in the peritoneum ; 2d, that the free passage of the excrementitious matter through the wound prevents the obstruction of the intestinal canal, and consequently the accidents to which this obstruction gives rise ; 3d, that the passage of fæcal matters by the wound never hinder the attempts of nature to restore the canal to its natural state. In speaking of wounds of the intestines, complicated with prolapsus, Mr. Travers says, that two modes of treatment have been proposed and employed with success.— The first consists in placing the opening of the gut in opposition with the parietes of the abdomen ;—the second in sewing the wound in the intestine, reducing it, and making a suture in the wound of the abdomen. After having related the opinion of Le Dran, Garengeot, Bertrande, Desault, Sabatier, and Benjamin Bell, on the glover's suture, and of Dionis, Wiseman, Heister, Sharp, Gooch, and Latta, on the same subject, he advises the suture of the intestine, its reduction, and the union of the abdominal parietes. Mr. B. Travers cannot become an authority, since all that he says is not the result of his own practice, and having had no experience on the subject of artificial anus, he has done no more than follow the opinions of his predecessors.*

Such was the state of science, when, in the first years of this century, and at a later period, in 1811 and 1812, patients affected with artificial anus presented themselves at the Hôtel Dieu. M. Dupuytren employed different measures to effect their cure, and not obtaining the success he expected, had recourse to an operation, in which he has since made important modifications, and brought nearly to perfection. We have elsewhere related one of the cases, in which is given a description of the first attempts made by this celebrated surgeon. This operation was performed before the large number of students, who attend with ardour the clinical lectures on surgery at the

---

* An Inquiry into the process employed by Nature in repairing Injuries of the Intestines, by B. Travers.—London, 1812.

Hôtel Dieu, and was speedily known to all the French and foreign practitioners. Doubtless it was in consequence of the attempts of M. Dupuytren, that some surgeons in the United States practised similar operations; but from the manner in which they proceeded, it is evident that they had very imperfectly understood the ideas of the French Professor. Mr. Dorsay, in speaking of the operation of Dr. Physick, of Philadelphia, states, that the intention of the operator was rather to procure some relief, than to undertake a radical cure. The cure, in fact, was only palliative, and it is probable that Dr. Physick has recognised the insufficiency of the method; for since this first Essay, the surgical works and journals published in America do not allude to any new attempt.

Experience and numerous observations have shewn, particularly from the new discoveries with which pathological anatomy has been enriched, that in wounds of the intestines with considerable loss of substance, or after a transverse division of the intestinal canal, or the entire destruction of a loop of the digestive tube by gangrene, the ends or circumference of the wound contract adhesions with the surrounding parts. In these circumstances the ends of the intestine correspond to the circumference of the opening through which the hernia has taken place. This adhesion is sometimes mediate, that is to say, by the neck of the sac; at others it is immediate, and then the intestine, from the effect of inflammation, adheres to the ring; the parts are retained opposite to the opening, the fæcal matters flow outwards, and no effusion into the abdomen can take place. The two ends of an intestine, a loop of which has mortified, are more or less distant from one another; and being held by the mesentery, they form an angle, which is so much the more acute, as the sides of the intestines are connected and adherent to each other in a greater extent. In some cases the ends of the intestine are almost parallel, and the fæcal matters not being able to pass from the superior to the inferior extremity, seek a more ready issue, and flow through the fistulous aperture.— Such is the cause of the artificial anus; that which prevents its cure, and which, up to this period, had defeated the efforts of the art.*

To render more easy the understanding of the disposition of the parts in this pathological alteration, let us at first suppose

---

* Anzeigeiner von dem Herrn Professor Dupuytren zu Paris Erfundenen und mit dem glucklichsten Erfolge ausgefuhsten operations weise zur Heilung des anus artificialis nebst Bemerkungen von Frantz Reisinger.—Augsburg, 1817.

the most simple case :—a loop of intestine is engaged in an opening, natural or accidental, at some point of the abdominal parietes ; a portion of its calibre, I suppose a half, has become constricted, the strangulation is not removed, and the disease is abandoned to itself. It should seem that the course of the fæcal matters should be only partially interrupted ; but do we not know that strangulation of the omentum alone often produces total suppression of the alvine evacuations ?   These two ends of the intestine, that coming from the stomach or the superior, and that proceeding to the rectum or inferior, engaging themselves in this opening, meet at an angle more or less acute. The posterior wall of the calibre of the intestine, that which forms the concavity of the intestinal arch, which is fixed at its back part to the mesentery, and which is drawn opposite to the opening in which the convex or anterior portion is fixed—this posterior surface, I say, must, from the disposition of the two ends of the intestine, necessarily make a projection into its cavity, opposite to the point of strangulation.   This projection will be so much greater as the two ends approach more to the parallel direction, and the parallelism will augment as the strangulated portion is more considerable ; at the same time, the space which separates the projecting band from the strangulation grows less, as the portion of intestine becomes larger.— Thus, when it is considerable, the course of the fæcal matters is mechanically interrupted ; inflammation soon seizes the intestine, and extends to the surrounding parts, as well continuous as contiguous, tumefaction supervenes, the constriction increases, and the obstruction to circulation induces gangrene, which extends from the intestine to the sac, to the cellular tissue, and to the skin.   The decomposition of the gangrenous parts is accelerated by the presence of the fæcal matters, and announced by the disengagement of gas.   The inflammation which attacks the surrounding parts is not, however, always, or every where, sufficiently intense to destroy their life.   The pressure which exists in these strangulations acts on several different points ; both on the viscera, which constitute the hernia, and on the circumference of the opening in which the viscera are fixed ; in these cases there is a reciprocal action of the ring on the viscera and their coverings, and reaction on the part of the distended sac upon the opening through which the descent has taken place.   The parts having perished in a certain extent, if gangrene ceases and becomes circumscribed, suppuration soon occurs between the dead and living parts, destroys their connections, and effects their separation.   If the patient survives such disorder, the fæces pass through the opening, mix with

the relics of the soft parts, the detachment of which is followed
by the decomposition of the wound, and an artificial anus is
established. The inflammation of the intestine is not always con-
fined to the strangulated part, and we know that the separation
of a dead part cannot take place without the existence of in-
flammation in that which still lives. The portion remaining in
the abdomen is inflamed ; the peritoneal surface of the intestine,
which is in contact with the circumference of the opening,
itself covered with peritoneum, is also inflamed ; and two se-
rous membranes in contact with each other, and in an inflamed
state, speedily become adherent. As is proved by uniform ob-
servation, the intestine in these circumstances presents an ad-
hesion to that part of the sac to which it corresponds, and
which the gangrene has not destroyed. It must be seen, that
to permit the hernia of a portion of the alimentary canal, the
mesentery, if it be a small intestine—the peritoneum and sur-
rounding cellular tissue, if it be a large one, must be dragged
and stretched. Here again observation confirms what reasoning
had rendered probable. On examination of the body, the me-
sentery is constantly found forming a long tense cord, which,
extending from the vertebral column, terminates directly at the
opening of the artificial anus, and forms a V, the point of which
is insinuated between the two ends of the intestine, and conse-
quently opposite to and behind the internal band or fold. This
band is formed by the projection of the surface of the intestine,
corresponding to the mesentery, and, as I have said, only exists
because the two extremities of the intestine, meeting in the
opening, form an angle more or less acute. Such is the process
of nature in the formation of an artificial anus, and such is the
disposition of the parts, when only a portion of the circumfe-
rence of the intestine is comprised in the hernial tumour, and
destroyed by gangrene.

It sometimes happens that, in such cases, the disease, after
having followed the course we have just pointed out, sud-
denly stops, and makes no progress towards a cure, which must
be attributed to the mesentery, that has ceased to retract. In
fact, we know that the extent of the mesentery is not the same
in all subjects ; that it is much more elongated in those who
have been the subjects of old herniæ, than in those where the
disease has been small and recent. It must result from this
difference in the anatomical disposition of the mesentery, that
the two ends of the intestine, and the peritoneal fold in-
serted into the angle formed by their union, will be more or
less stretched, and will have a much greater tendency to be
speedily retracted into the abdominal cavity when the mesentery

is short than when it is long. What leads us to believe that
the mesentery here performs the principal part is, the constant
disposition of which we have spoken, and the more rapid pro-
gress which the disease makes to a cure, as well in the latter as
the early periods. In the observations related by authors, the
cure has taken place within the three or four first months, and
after this epoch has only been effected by artificial measures,
which, in these circumstances, act for the most part in such a
manner as to supply the want of retraction. Thus exterior
pressure, which hinders the fæcal matters from passing through
the opening, forces them to surmount the fold, and to remove
it by pressing it deeper into the cavity of the abdomen. To
obtain this effect more completely, the patient is allowed a large
quantity of food. Some exceedingly rare cases seem to form
an exception to what we have just said ; the cure has taken
place, although a considerable loop of intestine has been de-
stroyed. Thus, in the example related in the collection of Sur-
gical Theses published by Haller, the patient lost two and a
half feet of intestine, and got well spontaneously six months
afterwards, living in good health upwards of twenty years. But
may it not be said, that here the loss of substance in the me-
sentery was in proportion to the extent of intestine destroyed,
and that the tension was in the same ratio ; therefore the force
of retraction must necessarily have been proportioned to the
degree of this distention ?

In many observations we find, that during the first periods
the patients were obliged to walk bent, not being able to stand
upright, without experiencing severe pain in the epigastric re-
gion, and that ultimately this indisposition disappeared. I would
almost venture to say, that, in these circumstances, we should
probably accelerate the cure by alternately stretching and bend-
ing the trunk, till we had brought about the natural rectitude ;
and that by this motion we should increase the tension, and
place the ends of the intestine in a condition more favourable
to their cure. If an entire loop of intestine is strangulated
and in a state of gangrene, the first reflection to be made is,
that this loop cannot have passed through a narrow opening,
without having its extremities in contact through the whole ex-
tent of strangulation, and more or less closely placed in the ab-
domen, proceeding parallel to one another for a variable dis-
tance. Gangrene having occurred in the intestinal loop, with-
out the opening, the two extremities, as I have said, must in-
flame ; and as they are in contact with a serous membrane, they
will contract adhesions with the circumference of the opening
in which they are fixed. Thus the two cavities of the intestine

will be separated from each other by a septum, which will extend outwards, and will be formed by the parietes of the intestine opposed to one another, and by the mesentery, which is inserted into the two extremities at the point where they come in contact. The fæcal matters will necessarily pass more readily from the superior or stomachic end of the intestine into the fistulous aperture, and be ejected by the artificial anus; than reach the lower or anal end, which is parallel to the first. The septum reaching to the extremity, the stercoral matters can only reach the inferior part of the intestine, after having passed out of the superior, and having been received in a space or cavity, the formation of which Scarpa allows, but which does not exist in fact, particularly if the parts be examined in the early stages of the artificial anus. Hence it becomes evident that the whole of the fæcal matters must pass into the artificial anus. In order that a spontaneous cure should take place, it is necessary that the septum should retract in such a degree that the intestinal cavity shall be no longer interrupted, which can only take place in the early periods, when the adhesions can yet yield, and when the mesentery has a greater tendency to retract. A period will arrive when the retraction will be no longer possible, from the strength of the adhesions, and from the want of tension in the mesentery; from this period things must remain in the same state during the life of the patient. As I have said that the tension of the mesentery was the cause of the retraction of the projecting band; and as, cæteris paribus, this tension is greater in proportion as the loss of substance is more considerable, we are led to a conclusion, apparently paradoxical, that is, that the hope of cure is greater (supposing an entire loop destroyed) in proportion as this loop is more considerable.

I have supposed first, that a small portion of the parietes of the intestine were included in the hernia, and that the projecting band was destroyed; and secondly, that the septum extended outwards to the surface. In the first case the cure is easy, whilst in the second it is almost impossible, either spontaneously, or by the ordinary measures of surgery. These are the two extreme cases, but there are many intermediate, as regards the extent of destruction, the length of the band or septum, the facility of the treatment, and the hope of cure. Some differences exist which consist in the disposition of the parts situated without, when the portion of intestine has not mortified in its whole extent, and when some points have escaped. I suppose that a loop, five or six inches in length, is strangulated; the constriction which operates on the intestine, commonly acts much less on the mesentery, the size of which is inconsider-

able, and of which the circulation cannot be deranged or inter-
rupted : the vessels, therefore, of this peritoneal fold, not be-
ing compressed, the circulation continues, and life is preserved
in the portion of mesentery, the intestine corresponding to which
has mortified. It sometimes even happens that by the com-
munication of the vessels of this portion of mesentery, with
the concavity of the loop, that the digestive tube is preserved
from mortification in the point we speak of. In this case the
intestine gradually returning, the patient is placed in the same
situation as those who have only a pinching of part of the intestine.
The bursting takes place in some cases at the point on which
the stricture acts, the rest of the loop continuing to live. The
gangrene may also seize the two ends, or one only, and then
almost always it is the upper, because it is distended by fæcal
matter coming from the stomach. When gangrene attacks at
once both ends of the cylinder which forms the loop, this loop,
separated from the rest of the canal, may continue to live by
the vessels it receives from the mesentery ; but by degrees ever-
sion takes place, the mucous membrane being exterior, and
the serous one lining the interior of the little canal. This red-
coloured sort of fungus secretes mucus copiously from its
whole surface ; the mesentery forms its pedicle, and keeps it at
the orifice of the ring, where it masks the two ends of the in-
testine, which it is more difficult to discover than to recognise
when discovered. As this portion is altogether useless in the
cure, it must be removed, and then the case is similar to those
where an entire loop has perished. It was on a patient having
an artificial anus of this kind that M. Dupuytren made the
first trial of his ingenious method. Other authors we find,
give several examples of a similar disposition of the parts. If
the gangrene takes place in the upper end opposite to the point
of strangulation, the fæcal matters will pass directly outwards,
without entering the rest of the intestinal loop, which will con-
tract ; and if it be not covered by the soft parts, the mucous
membrane will be everted, will cover the serous membrane, and
reach the edges of the wound. By degrees the two extremities
will return, but the inferior being less retractile, will remain
longer without, and will be returned into the abdomen more
difficultly, and at a much later period. To what are we to attribute
the tendency of the mucous membrane to become everted ? Is
it not because it is more lax, more extended, its folds giving it
a greater surface ; whilst the peritoneum fixed to the intestine
cannot stretch, and the fleshy coat, instead of dilating, con-
tracts in consequence of its irritability. If the bursting occurs
at the lowest point of the loop, that most distant from the point

of constriction, the fæcal matter to reach this opening must pass through that part of the loop which answers to the upper extremity, and this portion of intestine, instead of contracting remains dilated. The mesentery gradually retiring, draws the intestine with it; the loop diminishes, the projecting band recedes, the extent through which the fæces are to pass is less considerable, and soon forms only a cul de sac. The mesentery may retract, so that the band or septum shall be above the level of the opening in the intestine, and then the fæcal matter passes in a right line from the intestine to the external opening; and when the septum is removed from the parietes of the intestine, a part may pass it and enter the lower extremity. The patient then begins to have natural stools at intervals, becoming more frequent and more copious as the projecting bands sink deeper.

It may happen that the rupture or gangrene shall occupy some point intermediate to those we have pointed out; but it is easy to see that the results will be, according as it is more or less distant from the centre or extremities of the loop, as it is more or less extensive, as it is circular, oblong, longitudinal, transverse, &c.; but all these varieties are unimportant, and make no change in the essential points.

Practice may point out other dispositions which it is impossible to foresee, so variable is every thing relating to herniæ. A portion of omentum, strangulated with the intestine, might complicate the disease, but would not change the fundamental disposition of the parts; a disposition on which rests all the theory of the treatment of artificial anus, by the method of Professor Dupuytren. I wish to speak of the band or septum which hinders the passage of the fæcal matter from the upper to the lower end of the intestine. There are particular circumstances which form an exception to the general rule, and of these I must here speak. A patient in the Hôtel Dieu, who had an artificial anus in the groin, in order to prevent the continual passage of fæcal matter through the opening, had for two years been accustomed to introduce a tampoon into the intestine.— This tampoon, of large size, extended to the depth of three or four inches into the abdomen. In this patient the band could never be discovered which separated the two orifices, and consequently the inferior extremity of the intestine could never be seen. It is very probable that the pressure made latterly by the parietes of the superior end, had obliterated the cavity or orifice of the inferior end of the canal, and that the septum constantly applied to the inflamed part, had ultimately adhered to the surface of the inferior extremity. Here, although the band

was not recognizable, it had not the less existed. The case seems to be beyond the resources of the art; fortunately it is very rare, as mucous membranes with difficulty contract adhesions. Setting aside this extraordinary case, we may say, as a general proposition, that the cause which hinders the passage of the fæcal matter from the upper to the lower end of the gut, is a band or septum existing between the two portions, and formed either by the adhesion of the ends of the canal, or by the prolongation of the mesentery which is placed between the two parts of the digestive tube. This band is placed opposite to the artificial anus, and sometimes passes outwards, where it terminates one or two inches from the exterior orifice.

Knowing all these facts, and after having long meditated on these dispositions of pathological anatomy, M. Dupuytren thought that the most sure and easy method of re-establishing the continuity of the intestinal canal would be to destroy this band, which formed the only obstacle to the course of its contents. This way of viewing the subject, founded on the nature of things, that is to say, on the anatomical disposition of the parts, was infinitely more rational than all that had been attempted before that time, and of which the result had been so bad, that practitioners had abandoned these methods, and artificial anus had ranked amongst incurable diseases. The object once determined, the basis of the treatment became invariable. This band was to be destroyed, but the difficulty consisted in finding the means of fulfilling the indication without danger to the patient. In fact, the adhesion, uniting the intestines lying by, and in contact with one another, could not extend very far, and a cutting instrument in dividing this band might go beyond the adhesion, and cause an effusion of fæcal matter into the abdomen, which effusion would prove fatal.

The first idea that Professor Dupuytren conceived of destroying inter-intestinal, septum was to pierce it with a needle, and to leave there a loop of thread, a sort of seton, the presence of which would cause adhesive inflammation of the surfaces of the serous membrane, and afterwards, by tightening the loop of thread, to produce the section of the band, as in the treatment of fistula in ano, by the ligature. But, as in this last disease, it happened, that the division of the parts taking place slowly and successively, they united and cicatrized behind the ligature, as it advanced by cutting the septum; the fæces did not pass through the opening of the seton, and the wound made by this body in the membraneous band did not remain fistulous. When the ligature separated, the loss of substance was much less considerable than might have been expected, from the extent of parts it had included. A complete cure could not be obtained

by this method, but an amelioration of the state of the patient occurred : some fæces took their natural course, and they passed in smaller quantity by the stercoral fistula.   M. Dupuytren having recognized the extent of the adhesion of the parts, and convinced himself that the inter-intestinal septum might be pretty largely divided without danger of peritoneal inflammation, or effusion into the abdomen, devised a particular instrument with thick and grooved edges.   By the assistance of this instrument, and the pressure it makes, the parts to which it is applied, as well as the surrounding surfaces, become inflamed, and this moderate inflammation produces their adhesion.   In the end, the septum is destroyed at the points in contact with these forceps. In fact, a gradual and continued pressure ultimately divides all structures as a ligature does, and the inflammation which accompanies this ulcerative division effects the separation of the parts which have perished ; this inflammation extends to a greater or less distance on the surrounding parts.

We have said that inflamed serous surfaces, in contact for a certain period, contract adhesions ; this union is hastened by compression.   The pressure made by the forceps must, therefore, determine the detachment of the projection and septum, dividing the two extremities of the intestine attached to one another, and the formation of adhesions sufficiently strong to hinder the effusion of the fæculent matter. It was not, however, yet known whether pressure made on the intestines, so powerful as to cause gangrene, might not give rise to the same symptoms as the strangulation of a hernia.   But in the latter case these symptoms arise from two causes ; the one is the circular compression of the intestine and surrounding parts ; the other the suspension of the course of the fæces.   In the operation of M. Dupuytren, the effects of pressure only were to be feared, and this not being circular, would be less intense than in a strangulated hernia ; whilst the second cause of accidents did not exist as there was a free passage for the fæces.   In fact, the operation of M. Dupuytren might appear a sufficient cause for the production of enteritis or peritonitis ; but from the construction of his instrument, this skilful surgeon was enabled to command the symptoms, by regulating at pleasure the degree of pressure, and by the facility with which he could place or withdraw the instrument.   For this purpose it was formed of two branches, like those of forceps, which could be separately introduced into each end of the gut.   The action of a screw placed at the extremity of the branches brought them gradually towards each other, and allowed the regulation of the degree of pressure.   To prevent these forceps from slipping and becoming displaced, the corresponding edges of the branches were ar-

ranged in such a manner, that one of them, being about a third of a line in thickness, was received to the depth of a line, in a groove formed in the opposite one, and as we see the cutting edge of a knife fitting into the groove in its handle. The male branch was undulated, and terminated by a probe point. The female branch was also undulated on the edges of the groove, receiving the male, and the projections of the edge of one branch corresponded to the depressions on that of the other. The extremity of the female branch was curved, so as to cover the point of the male like a cap. The instrument thus arranged, and the band once embraced by it, the relation of the parts could not vary, and the forceps kept its place. The instrument was applied, and things happened as had been foreseen; the part of the band divided by the forceps, separated in eight days, and the ends of the intestine adhering, together formed the parietes of the new canal. The flowing of the fæces over the skin surrounding the artificial anus, causes a degree of irritation and eresipelatous inflammation, accompanied by many pimples, which becoming excoriated cause the patient considerable pain. The cuticle separates to a certain extent, exposing the part below, from which a secretion takes place; at first serous, then thick and puriform. This surface remains inflamed while the irritating cause continues, and the parts have the appearance of an inflamed mucous membrane.

In cases of artificial anus, the mucous membrane of the intestine, being in contact with the atmosphere and other extraneous substances, changes a little in appearance; it becomes more red and less villous, but continues to secrete a large quantity of mucus. This circumstance is one of the principal causes of the difficulty experienced in closing the artificial opening, even when the natural course of the fæces has been restored. Besides this, the skin in the neighbourhood is always so sensible as to render the contact of the fæcal matter exceedingly painful.

The patients, whom pain and necessity render ingenious, employ various means to hinder the constant passage of fæces.— Sometimes it is a truss, that the patient removes when he feels the desire of evacuation, which happens more or less frequently in twenty-four hours, as the upper end of the gut does not admit of much distention. As the slightest motion displaces the head of the truss, the patient is soiled by the excrement. It has been proposed to make the pad with a hole in the middle, which should be the orifice of a bag attached to it. In this manner the fæces would pass outwards, and the sort of ring formed by the pad of the truss being closely applied to the skin, the excrement would be obliged to pass through this funnel into the reservoir fixed at the upper and front part of the thigh. These

machines, although ingenious, present many inconveniencies; the patients, obliged to carry every where with them these instruments and their contents, are incommoded by the smell which arises from them; the apparatus is readily deranged by walking or any other motion; and, in order that the flow of liquids and fæces may readily take place, and that they may reach the bag intended to receive them, it is necessary that the position of the patient be vertical, as when it is horizontal the apparatus is of no service.

There are some patients who cannot support any mechanical contrivance, and guard the skin near the fistula, by the assistance of lint and linen. There are others again who are confined to their beds, and forced to pass there the remainder of their days. This circumstance alone would suffice to render their life painful and insupportable; but in addition to this, in some individuals, eversion of the upper extremity occurs at more or less distant periods. The mucous membrane passes out of the artificial anus, in the same manner as out of the natural one in the affection we call Prolapsus Ani. This eversion sometimes takes place to the extent of six or eight inches, and is rather a serious accident, from the pain the patient feels, and the difficulty of reduction. Those patients who wear boxes and other mechanical means to receive the fæces are not exempt from this complication. The intestine, meeting no resistance, opposite to the fistulous opening through which it passes, its mucous membrane forms a projection which enters the ring that supports the reservoir, and the prolapsus increasing, it stretches into the interior of the cavity, sometimes even to the bottom, where it is plunged among the fæces. In order to obtain the reduction of the displaced parts, the patients are obliged to take to their bed, and keep it for several days. This accident is owing to the same causes as those which produce the prolapsus ani, but it must occur much more readily, and more frequently, in the artificial than in the natural anus, from a deficiency of a sphincter muscle.

In almost all the patients there exists a remarkable disposition to hernia; the portion of intestine situated behind the accidental opening, and on its inner or outer side, pushes it forwards, and forms a more or less considerable tumour, which may even descend into the scrotum. The patients reduce this new rupture as though it were a common one. In the reduction they experience the same sensation, and the same noise is heard as in other herniæ.

In the body of a woman who died at the Hôtel Dieu, with an artificial anus, it was found that the intestine, which had re-

mained outside the abdomen for an extent of two inches, had contracted adhesions, anteriorly with the ring, and posteriorly with the relics of the sac, for a distance of some lines ; it was united to the peritoneum by its edges, and went about two inches beyond the level of the crural arch. Behind the intestine existed a peritoneal cavity, forming a cul de sac, two or three inches long, and communicating with the abdomen. It is easy to see, that, with such a disposition, a portion of intestine might readily have fallen into this kind of hernial sac. It is difficult to explain why adhesion had taken place only at the circumference of the intestine, and to such a small extent. The weakness of the patient, and the slight degree of inflammation, are, perhaps, the reasons why these adhesions were so limited, and did not extend beyond the circle of inflammation necessary for the separation of the mortified parts. This well-ascertained disposition of the parts should make us cautious in closing too quickly the external opening, with the intent of making the fæces pass into the lower extremity of the gut, lest we should lacerate the slight and recent adhesions.

In cases where the whole loop of intestine has been destroyed by gangrene, or removed by a cutting instrument, no such sac can exist : how then does the new hernia take place ? The inquinal ring is dilated, and it may be said gaping from the formation of an artificial anus. The viscera are directed towards this aperture by the action of the abdominal muscles, and meet with no other obstacle to their passage than the adhesion of the intestine to the ring. This adhesion, impelled forwards by the efforts of the viscera, is not always strong enough to resist ; and we know that patients affected with artificial anus cannot quit their bed, or make any effort, until long after the formation of this infirmity, when the adhesion has become stronger and more resisting. The machines worn by the individuals affected with this complaint do not always hinder the protrusion of the hernia, which becomes to them a new source of anxiety and pain.

The artificial anus has a marked influence on the whole animal economy. The chyme only passing through a part of the intestinal canal flows through the fistulous aperture, still containing a large quantity of alimentary matter, which cannot be absorbed, as one half or two thirds of the absorbents on the surface of the canal are doomed to a state of inactivity ; hence these patients are continually tormented by hunger. It is particularly at first that the appetite is most urgent ; it should seem that nature, for their preservation, warns them in this way, that the blood does not receive the nutritive principles in sufficient quantity. In the first periods the emaciation is rapid, and the

weakness very great. It appears also as though the shortness of the canal was compensated by the frequency of the repasts. If these repasts were as copious as is customary, when the digestive organs are in a state of integrity, the stomach would be always in action, and would speedily fail in the performance of its functions. It is remarkable, that persons affected with artificial anus cannot take at one time the same quantity of food as before the occurrence of the disease. The quantity of food taken at one meal, which they could originally have digested with ease, would now cause indigestion. Hence it results, that the quantity of food taken in the twenty-four hours is not greater, and that nutrition is defective. It seems, however, that absorption gradually increases in that part of the intestine which continues to perform its functions, in the same manner that in diseases where alimentation is suspended, the activity of the absorbents throughout the system is increased, to supply the blood with those particles which are wanting ; which leads us to believe that the emaciation disappears, and that the vital energies increase, in proportion to the duration of the disease. These people, are in general weak, without energy, and incapable of continued exertion. Besides all this, these phenomena vary infinitely, according to the point of the intestinal canal which has mortified.

From numerous observations on patients affected with artificial anus, it is known that digestion takes place not only in the stomach, but that it is contained in the intestines ; the function of which is not confined to the absorption of chyle, and the separation of the alimentary from the fæcal matter. A change is effected on the food by the intestines, in general when it has not been sufficiently elaborated by the action of the stomach, duodenum, &c. What proves that the hysterics does not oppose the passage of the food when its elaboration is not complicated, is the fact that those parts of it which are best changed pass most readily. The duration of the stay of the food in the stomach, is in a direct ratio to the quantity of nutritive materials it contains. The action of the stomach on any substance is more prolonged as the quantity of nutritive matter it contains is greater. The reason of this is very simple ; for what purpose could it answer, that an indigestible substance should remain long in the stomach ? Why should the organ increase its activity to dissolve and elaborate, unable to afford nutritious matter ? The stomach, therefore, allows the passage of such substances into the intestines, or rejects them by vomiting. For the opposite reason, a substance entirely alimentary, if such a thing exist, is the natural excitant of the stomach, and by its

presence will bring into full activity all the powers of the organ, which it will cease to exert when it no longer finds any thing adapted to its sensibility. The activity and energy of digestion must, therefore, be proportioned to the quantity of nutritious matter contained in the ingesta.

M. Lallemand, a professor of the Faculty of Medicine of Montpellier, read before the Faculty of Medicine of Paris a dissertation, in which he related some very curious observations on the functions of the digestive organs. These observations were made at the Hôtel-Dieu of Paris, in the clinical practice of M. Dupuytren, amongst whose most distinguished pupils M. Lallemand ranks. These observations were made on people affected with artificial anus.

" Thus," to quote M. Lallemand, " the aliments do not pass out of the stomach in the same order that they entered it ; but it is not those which are most readily changed, or resist least the digestive powers, that pass first, since those which present themselves at the artificial opening in the intestine most speedily, are precisely those which preserve, in the greatest degree, their original form and appearance, and afford least nutritious matter. This has no connection with their solidity, softness, or fluidity, since the same thing happens with raw fruit, spinage, prunes, &c. and with milk, &c. The food then remains longer in the stomach, whatever be its form, as it contains more matter capable of aiding nutrition, and as they are more animalized; for example, all kinds of meat, eggs, bread, &c. As it is probably the pylorus which retains it in the stomach, we may admit that it has an elective power, a peculiar sensibility ; that, in the common expression, it acts as a vigilant porter, (πυλωρος), and that in this way it forces those subtances, which still contain nutritive matter, to remain in the stomach. But as it allows others to pass in a state of integrity, more or less complete, and even before the rest, we cannot say with all physiologists that its office is to repel the food until it has undergone a proper elaboration, and to prevent any thing from passing into the intestinal canal, which has not been sufficiently affected by digestion. We should rather say, that it allows those to pass first, which contain least an alimentary matter, whatever be their form, even when they have undergone no alteration ; for we have seen substances pass in the same state they had entered the stomach ; whilst, on the contrary, those things remain longest which are fitted for nutrition. The action the stomach has to perform is, therefore, in a direct ratio to the quantity of nutritious matter contained in a given volume of food.

" All the facts observed on patients affected with artificial anus plainly shew, that—

" 1° Although the most animalized food is most nutritious, and *vice versâ*, yet it is not the most speedily digested.

" 2° That, on the contrary, the task of digestion is longer and more difficult, as in a given bulk the food contains more nutritious matter, and *vice versâ*.

" 3° That the different parts of the food do not quit the stomach in the same order that they were taken in ; that those do not first pass out which are first affected by digestion ; but, on the contrary, those which containing less nutritive matter are less susceptible of the influence of digestion.*"

It is not sufficient to have re-established the continuity of the alimentary canal, and procured a large and free passage for the fæcal matter ; we must also bring about the union of the edges of the fistulous opening.

This last point of the treatment is not so easy as might be believed. In scientific experimental inquiries, that which is conceived to be very difficult is often very simple, and obstacles are met with where they are least thought of. We have before shewn the resistance that the mucous membrane of the intestinals, in contact with foreign bodies, opposes to the formation of adhesions either on its surface or with other structures. In vain it is irritated by the application of nitrate of silver, and its surface kept in the most accurate contact. Union cannot take place while the mucous membrane retains its organization.

To obtain the obliteration of this little fistula, M. Dupuytren pressed the two edges of the opening one against another, by means of an instrument described in the case of Menage,† but in vain, though the contact was most exact, for a fortnight or three weeks. In vain, during this period, was the external surface cauterised by the nitrate of silver ; as soon as the pressure was relaxed, the edges of the wound separated, and no appearance was visible of an attempt at cicatrization. This fact sets at rest the objections of those who feared that the long contact of the mucous surfaces of the intestines, between the natural and artificial anus, might have caused adhesion in some point of this tract, or that the diminution of its size, from the fæces having ceased to pass through it, might present an obstacle to the cure.

---

* Pathological Observations, elucidating several Points of Physiology. A Thesis, by F. Lallemand, of Metz. Paris, 1818.

† This case does not appear in the present part of the Essay.

In order then to bring about adhesions between the mucous surfaces, it is necessary to find some method of changing their organization, or to remove the edges of the opening, as in the hare-lip operation. The first object could only be obtained by very powerful agents, as the arsenical paste, caustic potash, concentrated acid, &c. But how could we be assured, that these irritating and disorganizing agents would confine their action to the mucous surface, where we wish to produce adhesion ? The heated iron would perhaps have a more certain effect, and the extent and degree of its action might be calculated ; but we cannot judge, á priori, where the concomitant or consecutive inflammation it produces would cease. Would incision be preferable ? On the first view it appears easy and exempt from danger ; at least it has not the serious inconvenience of which we have just spoken. It is also the measure employed by M. Dupuytren in the case of Menage, and from which he obtained complete success.

If we refer to what we said on the small extent of the adhesions of the intestine to the skin, on the formation of new herniæ behind the artificial anus, &c. it will be seen that we can only act with security in a very small extent ; for if the incision went farther than the adhesion, a communication would be produced between the cavity of the peritoneum and the exterior, whence would result numerous accidents ; as effusion of fæces into the abdomen, inflammation, suppuration, gangrene of the organs contained in this cavity, &c. If then we decide on excising a portion of the skin and mucous membrane, it must be done with great circumspection, and in the manner practised by M. Dupuytren, when he performed the operation on the patient Ménage. The parts are to be removed by the edge of the knife being kept near the surface, so as to remove only a part of their thickness. However, we are not certain that an effusion of fæcal matter into the abdomen would necessarily occur, if in this excision an opening should be made into the peritoneal cavity. The viscera contained in this cavity occupy every part of it, and when an opening is made at any point of its parietes, the viscera present themselves there, and tend to pass outwards. In penetrating wounds of the abdomen with lesion of the viscera, there is sometimes no effusion of blood or fæces. The viscera impelled towards the parietes of the abdomen, force before them, and expel the liquids or fæces, which would otherwise have been effused into the cavity. In the case that we suppose, what should cause the effusion of the fæces into the abdomen, when the canal, which allows them a free passage, presents them dispositions favourable to their ready escape outwards ?

The continuity of the intestine being restored, might we not, for the purpose of obtaining the obliteration of the little fistula, pass a needle and unite it by a suture? However this may be, excision, the twisted suture, &c. have never by themselves produced a cure. Sometimes the needles cut the edges of the wound, but this accident may be avoided. It is to be remarked that after the removal of the apparatus, union occurred in the greater part of the wound, only from the circumstance of the violence of the inflammation and swelling which had been the consequence; and that the instrument, contrived for keeping the edges of the wound in contact, did not in some cases cause the union of the part which remained uncicatrized, whilst it was effected by the considerable inflammation and swelling of the edges of the solution of continuity, and the parts about it. We can then only hope to obtain this cicatrization, and the obliteration of the fistulous opening of the artificial anus, by the means of a pretty violent inflammation, and this part of the treatment of these infirmities does not present the fewest difficulties.

But supposing that the patient should remain with a fistulous aperture : this is to be remedied by a simple herniary bandage, the pad of which should be provided with a piece of waxed linen, leaving the patient in the same state as those who, being affected with hernia, are forced to wear a truss. Great attention to cleanliness is necessary, as a slight mucous weeping always takes place; but there is no comparison between this state and that of an artificial anus where the fæces pass through the opening. We here suppose a circumstance which sometimes exists, and which prevents a complete restoration; but in many cases M. Dupuytren has completely succeeded, and his patients have met with a perfect cure.

To finish what we have to say on the subject of artificial anus, it only remains to relate some cases, which will support and confirm the opinions we have advanced.

CASE I.

A woman, named Francoise Hugot, aged thirty-nine, a sempstress and an inhabitant of Paris, had a crural hernia from the age of nineteen. The tumour had arisen from an effort made in raising a heaving weight. Not being very voluminous, and free from adhesion, this hernia had never been kept up by a truss. It had descended and returned without causing inconvenience, until the 4th of September, 1817, when it became strangulated, in consequence of a violent effort. The nature of the disease was mistaken by the surgeons who were called in : the symptoms of strangulation increased and continued during twelve

days. A plaister was applied to the hernial tumour, which had become red and painful. Six days after this application it burst spontaneously at several points. Fæcal matter escaped with pus and gas. From this time the symptoms of strangulation ceased, and the excrements escaped by this artificial passage. The patient entered the Hôtel Dieu on the 20th September, 1817, four days after the opening of the tumour, and sixteen from the time of strangulation. Below the right crural arch the skin was red, swelled, and painful; five fistulous openings, at the dstance of some lines from one another, and partly obstructedby portions of mortified cellular tissue, involuntarily gave issue to the fæcal matter, which was fluid, of a yellowish or greenish colour, mixed with a bilious fluid.

The state of the patient altogether was not alarming; she had little appetite, no fever, the abdomen was voluminous, slightly painful on pressure, and there was some colic. Care was taken to avoid removing the pieces of mortified cellular tissue, for fear of destroying the adhesions of the intestine to the peritoneum. An emollient cataplasm was applied to the fistulæ. Broths were prescribed as the only food. During the first days, the stercoraceous matter and gas continued to pass by the artificial anus. No fæcal matter passed through the rectum. The colic ceased, the belly diminished in size, the portions of dead cellular tissue separated, and the fæces flowed more freely through the fistulæ; on pressing above the crural arch, gas and puriform matter flowed from these orifices. The skin in the neighbourhood was red and swelled. The use of cataplasms was abandoned, and the wound merely washed with marsh-mallows water. Emollient clysters were ordered, and a half allowance of bread granted. At the end of eight days from the use of clysters, the patient passed some flatus by the rectum, and experienced colicky pains. On the eleventh day, with the use of clysters, she passed fæcal matter in small quantity by the anus. On the sixteenth this again happened, and increased on the following days. At the end of a month the greater part of the fæcal matter passed by the natural anus, while the redness and swelling of the skin surrounding the artificial one had diminished. At the end of two months, the patient went freely to stool, without the use of clysters. Two fistulæ had closed, three remained, and gave issue to a fluid at one time limpid, at another yellowish. By pressing above the crural arch, the flow of this fluid was increased, and occasionally fæcal matter passed with it in small quantity. M. Dupuytren thought that the cicatrization of these fistulæ might be hastened by pressure made with the convex pad of a truss; but the attempt was

painful, and he was compelled to relinquish it on the third day. On the sixty-sixth day matter accumulated above the crural arch, and formed a slight tumour with fluctuation. By pressing it every morning it disappeared, and then pus, serosity and gas, issued from the fistulæ. To prevent the accumulation at this point, pressure was made with pads of lint and a spica bandage; but this was soon given up, as it caused the patient considerable pain. On the ninetieth day the tumour above the crural arch was more voluminous, the skin was slightly red and inflamed; emollient cataplasms were applied. On the ninety-first day the fluctuation was very decided, purulent matter issued from an opening made into this tumour, and in a few days another fistula healed. To hasten the cure of the two last fistulæ recourse was again had to pressure by a truss; the patient now supported it very well. In a short time a fourth fistula healed, and the woman requested her discharge. She quitted the Hôtel Dieu January 28th, 1818, having remained four months in that hospital. A small fistula only remained, the orifice of which was obliterated by concrete pus, and for six days neither fluids or gas had passed through it.

CASE II.*

A negro, aged forty-five years, in good health, and of a robust constitution, was suddenly affected with strangulated hernia. After the employment of several useless measures and much loss of time, I was called to his assistance. Finding reduction impossible, I forthwith decided on the operation which admitted of no delay. It was performed in the ordinary manner. The hernial sac had a very bad appearance, and when it was opened I found the intestine so mortified, that the only means of saving the patient's life, was to establish an artificial anus.

After the operation, the symptoms presented nothing alarming. By attention, and the administration of bark and other anti-septic remedies, with an appropriate diet, the patient recovered in a short time, with no other inconvenience than that of passing the fæces through an opening in the groin.

About a year after the operation, I was called to visit the same patient; he was affected with violent pain, particularly in the lower part of the abdomen, extending to the groin, where there was a considerable swelling. I learned that for some days he had passed no fæces through the wound as formerly. Ex-

* Related in the Memoir of the Medical Society of London, for 1805, by Dr. J. Lee.

amining the groin, I found the opening so contracted, that I could not introduce a probe, and I did not think it right to employ any force. I caused fomentations to be applied to the abdomen, clysters were given, and every attempt made to favour the passage of the fæces through the artificial anus. On the following day the tension of the abdomen, the pain and debility were increased, and accompanied by hiccup, vomiting, and other alarming symptoms, for which I prescribed large doses of opium. Towards evening, when a tragical termination to the scene was expected, the patient felt a desire to go to stool, and to the astonishment of all, the fæces were expelled by the natural anus. From this moment all the threatening symptoms disappeared, and in a short time the patient regained his former health. The wound in the groin has healed, and although some swelling remains, the excrements have constantly passed by the anus. This man is a mason, and consequently makes much bodily exertion, but experiences no inconvenience from it; at least, during more than three years since the occurrence of the accident, he has not complained.

CASE III.

Marie Elizabeth Blassel, a widow, aged 76, had entered a physician's ward in the Infirmary of the Saltpetriere, to seek relief for a chronic pulmonary catarrh.

This patient, who had borne only one child, had for thirty years an umbilical hernia, the cause of which she was unacquainted with. The tumour, which at first had been small, had increased insensibly until it reached the size of a fist, although the patient felt no pain. The tumour could be returned with the greatest facility, but the difficulty of keeping it reduced, from the laxity of the abdominal parietes, and the little inconvenience she felt from its descent, caused her to abandon every sort of bandage.

April 20th.—After dinner the patient was seized with vomiting, which occurred but twice, and on the top of the hernia, which from the vomiting had doubled its volume, she felt a troublesome pruritus, accompanied with heat. In the evening a slight erysipelatous inflammation already existed. The patient, however, suffered little, and made several attempts to reduce the hernia; but the parts composing it could not be returned as formerly. She still suffered neither from pain nor from hiccup, neither had she nausea or vomiting, and in the night she went to stool.

The 21st, at the visit, M. Lallemand was called in: he found her as follows :—A tumour, the size of two fists, the point of

which corresponded to the umbilicus, with a bright redness occupying nearly the whole tumour. Although the skin covering the hernia appeared tense and shining, the tumour was not hard and yielded to pressure; it was painful, from the extent of inflammation. The reduction of the hernia was attempted, and although very large, it returned without difficulty, from the large size of the umbilical ring. The intestine and omentum, forming the tumour, returned in a mass, and escaped in the same way. The gurgling heard in the reduction of an enterocele, could not be distinguished, and this in the end caused it to be supposed that there was strangulation; not from the umbilical ring, as all the parts of the hernia readily entered and escaped from this opening, but by the neck of the sac, which, returning with the contained parts, caused the continuation of strangulation. The patient was removed to the surgeon's ward, and an emollient cataplasm applied to the tumour.

22d: Third day.—The patient has had no stool; there is sleeplessness, tongue dry, pulse hard and small, inflammation proceeding, and a gangrenous vesicle, the size of a five franc piece, has formed on the opex of the tumour. The poultice was removed, and compresses applied, soaked in decoction of bark and camphorated brandy: decoction of prunes, with the addition of two drachms of soluble acidulous tartrate of potass, was given internally.

23d: Fourth day.—Since the 20th the patient has had no symptoms of strangulation; the vomiting has not recurred; she had had but one stool, but since yesterday she has had three. This circumstance might excite a doubt as to the existence of strangulation, as these stools followed the taking of the laxative medicine. We see scarcely any herniæ in which the patients do not cease to pass fæces by the anus, and this is the case even when the part of the intestine below the strangulation contained fæces at the time when the symptoms occurred. We may remark here, as a rare thing, the existence of strangulation, without any other symptom than the vomiting, which occurred on the invasion of the disease, and almost immediately disappeared.

24th: Fifth day.—An eschar has formed on the opex of the tumour, two inches in diameter. The suppuration very profuse, and having a foetid smell, is mixed with a certain quantity of abdominal serosisty, having a fæcal odour. A pledget, covered with styrax, was applied to hasten the separation of the sloughs. The pulse is weaker than on the day before, and the patient suffers more; she has no appetite. For her drink was ordered decoction of bark, a strengthening potion, and at night a cordial julep.

26th : Seventh day.—The pulse is very small, there is loss of sleep and appetite, the tongue is dry, and covered with a blackish crust. The slough is almost detached ; the dressings are soiled by a pretty large quantity of fæcal matter. The dead parts were removed with the scissors, as was a gangrened piece of intestine about three inches long.

27th : Eight day.—Pulse weak and intermittent : the wound was dressed with decoction of bark and camphorated brandy.

28th : Ninth day.—The patient has slept a little, the fever is less than yesterday. The dressings were soiled by a pretty large quantity of fæces of good quality. She has had no stool since the gangrene of the intestine. The regimen and dressing continued.

May 1st : Thirteenth day.—The pulse is improved, the patient suffers less, her tongue is cleaner and moister, she has a little appetite, and suffers more from the chest than the wound, which has a better aspect and florid edges. It was dressed with lint, dipped in honied urine, and bark with a cordial julep ordered.

3d : Fifteenth day.—The wound looks better, the upper end of the intestinal florid and quite circular, projects about two inches, and fills a great part of the transverse diameter of the opening in the abdominal parietes, it is retracted every time the patient makes a deep expiration. The lower end cannot be seen, being covered by the left edge of the wound to which it adheres, The same treatment and dressing as yesterday.

4th : Sixteenth day.—The pulse is natural ; the patient has a little appetite, and suffers less from the wound than from her chest, which appears loaded, though there is much expectoration.

19th : Twenty-ninth day after her entering the infirmary, and the twenty-fourth after the formation of the artificial anus, the patient sunk from the effects of a chronic catarrhal inflammation of the left lung, the existence of an enormous abscess in the parietes of the abdomen, and senile adynamia.

Examination of the Body.—The right lung was perfectly healthy, the left inflamed, and loaded with mucosity ; the bronchus on this side and its divisions injected, the mucous membrane lining it of a violent red ; the heart and its environs were healthy ; the abdominal parietes were very lax, though this woman had only had one child. In consequence of this laxity, the patient having always lain on the left side, the viscera inclined this way, and dragged the abdominal parietes, so that the centre of the umbilical region was no longer in the median line, but carried to the left, where there was a large opening,

almost circular, produced by the separation of the gangrenous parts formed on the centre of the hernia. This opening was nearly two inches and a half in diameter. The two ends of the intestine proceeded to it in the following manner :—the superior from right to left, from behind, forwards, and a little from below upwards; it formed a projection outwards of nearly two inches, its opening gaping and perfectly circular. The inferior end was a little below and to the left of this. Far from making a projection, it was sunken and adherent to the bottom of the wound, and separated from the upper by a space of two inches. The opening of this lower end, covered by the left edge of the wound to which it joined, was difficult to discover. After the finger had reached its orifice, it was necessary to raise the edge of the wound to enter its cavity. To discover the relations of the two extremities to one another, and to the abdominal parietes, a circular incision was made in these parietes, leaving the umbilicus in the centre. Before reaching the abdominal cavity, on the left, and below the umbilicus, between the skin and muscles was found a vast sac, communicating with a canal which led to the left groin, into the substance of the labium, and thence extended to the posterior part of the buttock. This enormous abscess and canal, both filled with a large quantity of pus, alone sufficed to explain the death of this woman, without the chronic pneumonia. The flap having been completely detached and raised by its circumference, so as to represent a funnel, the base and hollow of which were turned upwards, and the summit towards the orifice of the superior extremity, the following were the appearnces :—All the viscera were perfectly healthy, without any trace of inflammation; a proof that there had been no communication with the exterior during life, and no effusion of fæces. In the centre of the flap, and on the peritoneal surface was also seen a bundle of small intestines, which had contracted adhesions; those which held only by short and weak adhesions were detached to expose the principal parts; the ascending colon was then seen after having changed its direction, to become transverse, bending to the opening in the parietes of the abdomen, and forming the superior projecting extremity which we have described, whilst the other end belonged to the left extremity of the transverse portion of the colon. This transverse portion had not its natural horizontal direction, but passed obliquely from below upwards, and from within outwards, towards the opening of the umbilicus, where it formed an angle, the point of which corresponded to the umbilicus; in front of the colon, was seen a portion of small intestine, firmly fixed by its convex part to the external opening,

and preventing by its adhesions the effusion of fæces inwards. Before detaching it, it was tried whether the ingenious process of M. Dupuytren, for restoring the course of the fæces, could be employed in umbilical, as well as is in crural and inguinal herniæ. The two parts of the instrument were introduced, the one into the upper, the other into the lower end of the intestine; they were then united, and after having fixed them by means of a screw attached to the male branch, they were gradually approximated. The consequence was, that the two ends of the intestine were brought into close contact; the loop of intestine placed in front remained in place, and there can be no doubt that had this woman lived, considering the laxity of the abdominal parietes, a cure might have been effected, and the course of the fæces re-established.

We see from this case that strangulation may be present, although the hernia appears to be readily reduced whilst the symptoms do not cease. This is what happens when it is formed as in this case by the neck of the hernial sac. We see also, that there may be strangulations without vomiting, when it occurs beyond the ilio cæcal valve, from the obstacle this presents to the return of the fæces from the large into the small intestines

CASE IV.

Marguerite Mongin, aged eighty-three, had for two years a hernia in the right groin, which had been down seven days in consequence of an effort in making a bed. She was brought to the Hôtel Dieu and placed in the Salle St. Jean, where she was operated on. The crucial incision made in the integuments, already sphacelated, exposed the sac, omentum and intestine, black and gangrenous. The wound was dressed in the ordinary way, and two injections with a decoction of tamarinds ordered for the patient, who was very weak and had tension of the abdomen.

The second day from the operation.—No sleep, severe colics, weak pulse, hiccup and vomiting; she could not receive the clysters.

Third day.—Stupor and continual hiccup, no vomiting, two very copious fœtid stools by the anus, of dark matters, liquid and solid; pulse pretty good, but week. Same treatment.

Fourth day.—Wiry pulse, hollow eyes, fixed look, severe colic, purging, belly tense and hard; the vicinity of the wound gangrenous. Death.

The examination of the body shewed a general inflammation of the intestinal tube, filled with air and fæces. The portion

of ileum forming the hernia, presented an acute angle an inch in length, but mortified for six inches above the strangulation, and its parietes five lines in thickness. Its diameter was reduced, filled with excrement and puriform matter. It had also contracted adhesions in every direction with the crural arch.

(To be Continued.)

Art V. *Traité de la Fièvre Jaune.* Par Jean *Devèze*, M.D. &c. &c. Paris, 1820.

(CONTINUED FROM VOL. II. NO. VIII. PAGE 449.)

Τήν τε θεραπτιηην αριϲἶα αν ποιέοιτο προειδὼς τὰ ἐϲόμενα ἃ ἐκ τῶν παρεόνἶων παϑημάτων. Hippocrat. Prænotionum Liber. Sect. 1.—3.

Of the origin and propagation of yellow fever, the opinions have been various and contradictory; and their propounders have endeavoured to support them with no small degree of acrimony. The frequent occurrence, in the United States and the south of Spain, of the epidemic form of this disease, has given rise to a considerable share of interest, not only among medical men, but among all classes of society. Our relations with Spain lately added to the interest, which our intimate connection with the West Indies naturally excited, and afforded us also a more extensive field for observation; notwithstanding, those who entered upon it, returned with opposite ideas as to its origin and propagation. Nor have opposing opinions been confined to this country; our American brethren have sufficiently agitated the question, and those in France, who have witnessed the disease either in the West Indies, America, or Spain, have been also divided in their sentiments. The interest excited in this kingdom is not likely soon to subside, if the endeavours of medical writers on this subject be considered. Within the present year we have no less than two considerable volumes,* espousing opposite views of the subject; with a Report upon one of them from the Academy of Sciences of the Institute, drawn up by Portal, Pinel, and Cuvier.

Whether the interminably contradictory proofs and opinions adduced and entertained by authors upon this subject, are owing to preconceived views; to the natural difficulty of the subject,

---

* Devèze and Moreau de Jonnés Monographie sur le Fièvre Jaune. 1820.

and proteiform character the disease may, under peculiar circumstances, assume; or to the influence of both causes, we shall not take upon us to decide; but this we cannot help remarking, that the temper in which the subject has been discussed, by some of the disputants, may warrant the supposition that the former has had some effect in retarding the advancement of our knowledge of the laws by which this disease is regulated.

The opinions already espoused upon this important subject (as must be known to our readers) are,—that yellow fever is essentially a contagious disease;—others believe it not to be essentially such; but that, deriving its origin from local causes, it may assume this character under certain circumstances;—while the opinion, that it derives not only its origin, but is also propagated entirely from malaria, generated by a high temperature from the usual sources, has been asserted with equal, and we may even say, with superior evidence.

Among the latter class of disputants we may rank M. Devèze, although his opinions upon the source of the disease are of no easy comprehension; and we cannot blame ourselves, seeing that the justly celebrated individuals, commissioned by the Institute to decide on its merits, have erred in a similar manner. In regard to propagation, our author may be better understood; as he considers, in common with this class of reasoners, that this disease, strictly speaking, cannot be said to be propagated; although it may spread or diffuse itself, from the extended operation of the original causes. The faculty of propagating its species from one individual to another, he asserts it never can possess, under any circumstances. The want of perspecuity, with which we charge M. Devèze, arises in some degree from attaching different meanings to terms, than they have usually received; from the extension and division of the causes which he assigns the disease; and chiefly from attributing its origin, in some instances, to the same sources from which other diseases spring, that are acknowledgedly contagious. His division of contagious and infectious diseases, also renders this writer rather obscure on the point of dispute. While he confines the meaning attached to contagion, he greatly extends the definition of infection, and thereby embraces under this term diseases on the one hand, generally considered contagious, and on the other, some that had never an infectious quality imputed to them. Of our author's views on this subject we shall soon have an opportunity to remark.

M. Devèze commences the second part of his work with the consideration of the ætiology of the disease. This subject he considers under two heads. The first he denominates the true

and *necessary* causes; without which the disease could not be produced. In this class he reckons high degrees of atmospheric temperature; peculiar states of the atmosphere; the air surrounding all centres of putrefaction. He considers the latter as sources of infection—" des foyers d'infection." Those centres of putrefaction; are, all places in which animal or vegetable matters exist, undergoing decomposition; whether in swampy districts, or in low, crowded, moist, and unventilated situations.* The miasms generated from such sources, he views as the cause of diseases, to which the term infectious ought to be applied; and these, when floating in a hot and moist atmosphere, as the legitimate causes of this disease.

In assigning the *necessary* sources of yellow fever, M. Devèze has, in our opinion, been too much attracted by putrid animal emations, while he has entirely overlooked that which, in our opinion, gives rise to the most malignant form of the disease; namely, the richer constituents of clay, and absorbent soils, elicited from them in a state of gaseous existence, by the direct rays of the sun, and issuing most likely in combination with the aqueous vapour. This source of yellow fever we had obtruded on us, by observing, that the most malignant type of this disease took place in situations where those deep and rich soils most abounded, and where they had been inundated during the rainy seasons. But disease, although prevalent at the termination of these rains, and presenting the intermittent or remittent types (unless in unacclimatés) did not assume so violent a form, as during the continuance of the dry season, when vegetation had faded, and the superior strata of earth had dried so as to exhibit deep fissures. May not those elements existing in a rich soil, and which nourish the vegetable creation, be volatilized when subjected to powerful solar influence; and from forming new combinations, and being diffused in the air, or absorbed by the moisture existing in it, produce a noxious effect upon animal life; especially during respiration, when it is presented to the blood while undergoing the decarbonizing process? Our opinion is in the affirmative; and also, that this form of malaria overwhelms more completely the powers of life, and the system consequently does not exhibit that steady and general re-action; while, from the uniformity of its operation, it simulates more completely the effects of a virulent contagion, and even respects not the seasoned residenters. The second comprehends the

---

* Page 354.

causes existing in the subject, which may be viewed as only ad-
ventitious, and modifying the character of the disease. These
he names *occasional* causes. He subdivides them into *predis-
posing*, and *determining*. The first includes a full habit; rigidity
of fibre; the sanguine, bilious, and irritable temperaments; the
male sex, and all in the vigour of life. The observations of M.
Devèze agree with those made by Berthe * at Cadiz, who found
among 7387 deaths, only 1577 females; and at Seville, 14685
male to 3672 female victims. The predisposition of unaccli-
matés he reckons to be on a ratio with the heighth of latitude
of the countries of which they are natives. Those who have
previously lived in moist and marshy situations are more exempt
than those habituated to an opposite climate. Inhabitants
of an uniform temperature are more liable to attacks than
those who are habituated to atmospherical vicissitudes. In
this he is supported by Baron Humboldt, who says, that the
Mexicans, who are accustomed to an unvarying temperature,
when they descend to Vera Cruz during the continuance of
yellow fever, are more readily attacked than Europeans who
had lived in a colder, but more changeable climate.

The immunity of residenters only continue so long as they
remain in the same, or a similar climate. A return to any of
the more northerly countries of Europe, we know from nume-
rous proofs, will so far restore the system to its healthy tone,
and phlogistic diathesis, as to render the person obnoxious to
a second attack upon his revisiting an unhealthy tropical
country; and according to the state of his system and habit
upon his return, will be the severity of the seizure. Every
subsequent attack will, however, be more mild than its pre-
decessor, provided the intensity of the causes are not increased;
to this there are some exceptions, which have come under our
own knowledge. M. Bally mentions one of this nature in
p. 340 of his work, in a lady from Canada who had lived
thirty years in the West Indies, and after an absence of two
years in the North of America, died on her return to the former
place, in the seventh day of the disease, and 54th of her age.

Dr. Pym has laboured to produce a conviction of this disease
being possessed of the property of affecting the system only
once. On this question we consider ourselves as capable of
giving a decided opinion. The author under review, appears
to have been ignorant that the partial immunity which a pre-
vious attack produces, had been laid hold of in order to cha-
racterize the disease; but the characteristic which this writer
would apply to it is not a partial, but an absolute immunity.
This assumed essential, like the opinions which has led to

the employment of the name " Bulam fever" is entirely illusory, and founded on narrow views of this subject. The adoption of the opinions of Chisholm, and naming the disease from this unauthenticated source, was no great stretch of originality; but to stamp it with this additional character had a more poetical effect, inasmuch as it called into action the faculty of imagination, to assist in the elucidation of one of the most difficult synthetical deductions in the science of medicine—

" Miraturque novos fructus, et non sua poma."—VIRGIL.

It has fallen to our lot to have visited this Pandora's box ; from whence (according to the contagionists) have issued the numerous epidemic yellow fevers that have raged for the last thirty years. Along with this place (Bulama, in the mouth of the Rio Grande), we have visited many others on the west coast of Africa ; and from the most extensive inquiries on this subject, we believe a contagious yellow fever was never known to exist on its shores. In regard to the imputed immunity produced by previous attacks ; we can say that seizures of this disease, whether primary or secondary, are entirely relative, according to the intensity of the cause and the circumstances of the patient ; and although previous attacks prevent, in the continued residenter, or mitigate a subsequent one, after a return from a temperate climate—if the energy of the causes are nearly the same— yet when the system is subjected to those of increased concentration, a second, or even third seizure may not only not be prevented, but it may be more severe or even fatal. Of this we could adduce the most striking proofs, but the present instance is too remarkable to call for further illustration. A highly intelligent and excellent individual, who had resided many years on the African coast, acquainted with the partial immunity of those who had previously suffered severely in yellow fever, endeavoured to take advantage of that circumstance, when fitting out a vessel from this country to one of the most unhealthy destinations in that quarter. The whole of the crew (amounting to about twenty), were accordingly selected from those who had suffered in this disease, within a few years antecedently. During a delay of some months at one place on this coast, all the seamen again had the fever, accompanied by the same phenomena ; and three individuals alone returned to this country. The state of this vessel fell under our own observation at the commencement and termination of this fatal voyage. Having been made acquainted with this gentleman's intention, the circumstances of the crew were individually inquired into, at an early period of its progress ; their subsequent sufferings

were circumstantially related to us,* by a very intelligent young man, the first mate—the only surviving officer. He had previously had the disease in the West Indies, and in Africa, and on this occasion experienced an attack of dysentery, from which he was cured by a negro.

Our experience on this subject warrant the following conclusions :—1st. Yellow fever, whether appearing under an endemic or epidemic form, may, from the variation, combination, or multiplication of the exciting causes, operating in conjunction with the general or particular circumstances of individuals in the district it ravages, present various degrees of malignity. 2d. If the intensity of the usual causes of the disease increase, individuals resident may be affected by the disease, even although they may have had it before; and the second may be more severe than the first attack, notwithstanding their continued residence. 3d. A person affected in such a manner as to exhibit the symptoms of the most violent form of the disease, may have the energies of the system diminished in so permanent a manner, as to render it afterwards incapable of usurping the continued and more severe type of fever, when again exposed to causes equally or even more intense. 4th. That individuals, who have had their vigour and phlogistic diathesis subdued by the operation of intense and multiplied causes of the disease, are not susceptible to those of less or equal power, unless the tone and energy of the system be previously restored by an intermediate residence in a temperate climate. 5th. In individuals who have thus had their rigidity of fibre and vigour of system subdued, could not be again affected, at least in the continued form of the disease, so long as they remained in this state, as they possess not that condition of system necessary to its development ; especially when subjected to causes of less intensity; and hence the origin of Dr. Pym's fallacious character of the disease. 6th. That persons who have experienced the epidemic form of yellow fever are more exempt from endemic influence.

Labourers and artisans accustomed to respire an impure air are more exempt, and vice versa. Dread of the disease, and all the depressing passions, greatly dispose the system to its invasion ; while hope, &c. and every pursuit energetically pursued, with an elevated tone of mind, bestows complete immunity on the system. M. Devèze remarks, that negroes are not

---

* The black vomit and yellow tinge, were prominent in both their former and latter attacks.

entirely exempt from this disease. If they have resided a considerable time in a cold or temperate climate, before exposure to its causes, they may experience its attacks.

The causes which M. Devèze calls *determining*, are nearly the same in this as in many other diseases. Among these, debauchery of every species, and excess in any of the appetites, exposure to the burning rays of the sun, night air, fatigue, and wet clothing, are prominent.

Our author next attempts to define the terms infection and contagion, and to assign to each its natural meaning. *Infection* he considers as emanating from a centre of putrefaction, and as impressing the system of any individual submitted to its influence with a particular disease. He supposes it, with M. Nacquart*, to be derived from three grand sources—1st, from stagnant water, abounding with vegetable matter, and insects, undergoing decomposition; 2d, from animal matter in a state of putrefaction; and 3d, the vitiated, confined, and often respired air in crowded prisons, camps, and hospitals. To the first he would confine the term effluvia; to the second, putrid emanation; and miasm to the last. These he considers as three sources and forms of fermentation; and from these result those diseases to which the name infectious ought to be restricted. As such, he recognizes intermittents, bilious remittents, dysentery, typhus, and the plague. These diseases, especially the four first, he believes to originate not unfrequently from the same source, namely, from marsh effluvia, the degree of temperature, and state of the air determining the species of the disease. We are by no means prepared to assent to this opinion, so far as it respects typhus and the plague. We are inclined to suppose that M. Devèze, instead of limiting the term typhus to that kind of fever truly possessing a typhoid character, and arising from sources evidently producing this distinct form of disease, extends it to all continued fevers occurring in temperate climates; assigning it as general an application as it has obtained, these few years past, in this country. On this subject our author draws too hasty general conclusions from deficient data.

By *contagion*, M. Devèze understands a mode, by which a diseased individual communicates to another the disease with which he is himself seized. All diseases that may be so communicated, being called contagious. They have for their characteristic, the faculty of being propagated from one indi-

---

* Journal des Sciences Medicales.

vidual to another by contact, either directly or mediately. They engender a disease, specifically the same as that from which they derived their own origin. Their specific morbid property is preserved in their virus or miasms, a longer or shorter period after they are generated. Thus clothes may communicate the disease two months after having been worn by its subject.

This article is not treated by M. Devèze as forming an essential part of his work, but only intended to elucidate his views of the non-contagion of yellow fever; we cannot, therefore, subject it to any decided animadversion. It cannot be supposed as fraught with any views, which, had we given them in detail, would have rendered the ideas of our readers upon this subject more distinct. In many points they nearly coincide with those of Dr. Hosack. Where they are more marked by novelty, there the reasoning is more loose. Nor is this part of the subject treated with the extended views, nor with that degree of scientific research,—necessary to the full recognition of the connections existing among the diversified phenomena which appear in various epidemics. On that part of the subject regarding the origin of the diseases he denominates infectious, he is particularly deficient in those requisites. Marshy situations, and soils covered by impenetrable vegetation, part of which must be always suffering decay,

> " Quo nunquam radiis oriens, mediusve cadensve,
> Phœbus adire potest."———— Ovid.

are not sufficiently considered, in regard to their effects; while the nature of the soil itself, and the operation of its more volatile elements, elicited by the direct influence of the solar beams, and which render some places, when completely cleared of their bulky vegetation, more noxious than in an uncleared state, are completely overlooked.

We perfectly agree with our author in considering a great part of the diversity of opinions among our brethren upon this subject to arise from assigning different meanings to the terms, and from a deficient knowledge of the instruments we handle in many of our intellectual operations. We acknowledge our obligations to M.M. Hosack, Nacquart, and Devèze, for arresting the attention of medical men to the subject. But to treat it as it deserves, and to assign the precise meaning which should be connected with these terms, and also to point out the diseases to which each is strictly applicable, would be of itself an undertaking of no mean importance. To execute it in a manner requisite to the clear conception of their individual influence, in giving rise to, or propagating disease, would require a scientific

research of no small extent; while to obtain data sufficiently diversified, from which not only conclusions might be drawn, but objections foreseen, and seeming incongruities reconciled, would demand considerable experience, learning, and sagacious observation.

M. Devèze considers yellow fever as a disease always arising from a source of infection; it is never an imported disease, nor is it propagated from one individual to another. To prove these points, he adduces the most convincing proofs, and certainly has more effectually laboured to destroy the phantom of contagion than to establish his own views on infection. He renders apparent the fallacious and insufficient evidence of imported disease, while he distinctly points out the places from which, under favourable states of the atmosphere, it derived its origin, issuing from a centre of putrefaction. To repeat the different proofs adduced by this writer would be incompatible with our limits, and w should be going over the same ground that has been so ably laboured by Dr. Bancroft and subsequent writers. The opinion of M. Devèze, drawn from sources the most extensive and convincing, must have considerable influence towards determining the question.

The evidence collected by ourselves upon this point cannot be presented in the space allotted to this article, we must therefore forbear adducing any thing upon the subject. Dr. Jackson says, he never saw the disease put on a contagious form during his extensive experience. We expect the researches in which he has been engaged, regarding the origin and diffusion of the destructive epidemics lately prevailing in the south of Spain, will at last set the subject at rest. We wait with no small impatience the result of his inquiries.

M. Devèze enters upon the consideration of the means of cure to be resorted to, according to the different stages of the disease. The periods marked out by him are three; and characterized by the symptoms of re-action or excitement in the first; by these phenomena, that evince consequent collapse in the second; and the third is only, as he acknowledges, the second period arrived at a greater degree of exhaustion, compatible with the continuance of life.—" Qui n'est, si l'on veut, que la seconde poussée à son *maximum*, et accompagnée de signes d'ataxie, ou de malignité plus manifestes."—p. 25.

In the former part of this article we gave a new arrangement of the different stages of this fever. That division was adopted by us for the following reasons:—1st, because it was more simple and natural; 2d, it is applicable to all idiopathic fevers; and 3d, because these periods evinced distinct phenomena, or

states of the system, each requiring an appropriate and often opposite mode of cure. And although the subsequent periods arose in the system, as the result of changes effected by the agency of the first; yet each stage required the treatment to be varied with the changing aspect it assumed, without laying down any empirical or specific plan, strictly applicable to any one stage, in every subject in which it might emerge.

On entering upon the important part of this subject, we shall follow our own arrangement of the plan of cure (according to the periods of disease), at the same time we shall not fail in presenting our readers with that recommended by our highly respectable author, under similar circumstances. Before, however, we commence exhibiting the diversified remedial agents that ought to be resorted to, through the course of this disease; we must say, that no one intending to encounter its ravages, ought to trust to the authority of any one writer upon the subject, either in this country or any other. If he confides in more than one, or in many, his practice will be undecided, and his mind bewildered.

Of the numerous authors upon this subject, both in England, America, France, Spain, and Italy, we could enumerate nearly one hundred, who are deserving of reference, and who have each contributed his share towards promoting either the ætiology, pathology, or treatment of the disease; yet none (with the exception perhaps of Dr. Jackson,) would we recommend individually, as proper and safe guides, in the treatment of a disease which requires more discrimination than any with which we are acquainted. Were we to state our grounds of objection, we would at once say that the exclusive and often indiscriminate modes of cure, recommended by nearly all, although applicable to many forms of the disease, must, in the hands of the man proceeding on authority, be mischievous to an equal number. This observation is applicable to all general methods, whether by blood-letting, by mercury, by bark, or by purgatives. That practitioner, it must be evident, will be most successful in this as in all diseases, who, unfettered by authority and preconceived opinions, proceeds upon careful clinical analysis, and an intimate acquaintance with the operations and laws of the animal economy. This is the true source of a felicitous tact, and from it he will endeavour to proportion his means to the ends intended to be fulfilled, and will be ever ready to assist or controul the operations of nature.

The first step towards curing this disease is to remove the patient out of the reach of the exciting causes; this should never be neglected in any stage of the disease, when it can be

attempted with safety. The principal indication that we should propose to ourselves, would be to cut short its different stages; this we should strenuously enter upon, in which of its periods the patient may be submitted to our care. The manner of fulfilling this indication comprehends the whole plan of treatment. The expectation of a crisis should never paralyse our exertions, it is not to be looked for in this disease. Although changes may spontaneously be effected in the system, leading to a favourable issue, or indicative of its approach; yet such take place at various periods, and are of most uncertain occurrence.

The phenomena and the cause of diseases arising from marsh miasmata, atmospheric vicissitudes, &c., are entirely different from those that spring from contagion. The latter operate their changes in the system in a regular manner, and in periods of a given duration. To disturb in them the regular series, might lead as frequently to a fatal as to a favourable issue. The extension of this doctrine to diseases that are non-contagious, has betrayed many of our continental brethren to an inert method of cure: accordingly we find these excellent pathologists Berthe, Bally and Palloni, like true disciples of Hippocrates, searching after a crisis in yellow fever, and not unfrequently waiting its approach.

The first stage, or that of invasion, seldom comes under the observasion of the general practitioner, unless it exist in an unusual degree of severity. Before medical aid is obtained, the second period, or that of excitement, is generally fully developed. As, however, well regulated treatment in this stage will be of the utmost service in conducting the patient safely through the subsequent ones, we will endeavour to point out the means that should be resorted to. The symptoms indicative of its existence, we shall suppose to be sufficiently described in the history we gave of the disease, to lead the unexperienced to recognize it.

The general indication with which we set out, should not be lost sight of in this stage; for if not arrested by proper means, the second will be rendered more severe; or, if it exist in a great degree, and is allowed to continue, or if improperly treated, it may overwhelm the energies of life in some constitutions, without the stage of excitement making its appearance. Therefore, when called to a patient complaining of the symptoms of invasion, the first means that should be had recourse to are a warm bath of 100°, with frictions along the whole surface of the body, but especially over the hypochondria and the limbs; this will serve essentially to terminate this state of torpor, and bring on a moderate re-action; by recalling the circulating

mass from the large congested vessels in which it was accumulated from a deficiency of nervous energy; while at the same time a stimulus will be afforded to this system, and Nature, assisted in the mode of operation she usually pursues, towards affecting the changes, conducive to a return of the healthy relations of the system. If this alone produced the intended effect, and re-action supervene, then the second stage has commenced, which will be considered in due course.

An emetic may be administered at the earliest part of this stage with considerable advantage, and without incurring that degree of danger which might attend its subsequent use. When, however, these means do not readily accomplish our intention, the temperature of the bath should be increased five or ten degrees, according to the effects it may produce upon the feelings of the patient, and upon the pulse. If these efforts be still inadequate; after he has been removed from the bath, frictions with hot flannels and capsicums should be employed, or very hot fomentations of a strong infusion of the latter. —When the patient is not of a full habit, and these means have been unsuccessfully employed, an emetic should be exhibited, if not previously resorted to; but in this disease it requires the utmost discrimination to use them with advantage. This is the only period in which they are admissible; and they often require this preparation. When judiciously exhibited, they not only tend to terminate this stage, and induce a moderate re-action, but also to promote the evacuation of the corrupting and offending ingesta remaining on the stomach, and the acrid contents of the gall bladder. The stimulus which its exhibition affords to the stomach, by intimate nervous communication, acts upon the system generally, and particularly promotes the action of the liver, which in this stage of the disease is generally torpid, and consequently congested.

The choice of the emetic must be left to the discretion of the physician: a knowledge of the effects of each, and the end he proposes to accomplish, must be his guide. If however it should happen, that great irritability of the stomach is present in this stage, and from the appearance of the matters ejected, it is evident that the ingesta have been thrown off, and that it arises from an asthenic inflammatory state of the mucous membrane, emetics would be hurtful. This great irritability of stomach is not often present in this stage of the disease; indeed it cannot exist for any time without inducing some degree of excitement; then the exhibition of an emetic would be poison.

In weak, and nervous habits and acclimatés, it will sometimes be a matter of difficulty to discriminate when actual re-

action exists in the system; but by attending to the previous
phenomena, to the heat of the body, to the temperature of the
respired air, and the nature of the irritable state of the stomach,
with the period of its duration; we can always form an opinion,
although the actual state of pulse, and appearance of the coun-
tenance, may not indicate its existence. When the onus of the
re-active stage falls upon the mucous membrane of the intes-
tinal canal, as it always does, in debilitated constitutions, and
towards the end of this period; we can neither expect to find
the pulse to possess tone, or the countenance to exhibit general
increase of action.

During the stage of invasion, in weak habits, and in the
melancholic and phlegmatic temperaments, diffusive stimulants
may be combined with, or follow the means already recom-
mended to bring on re-action, and support the powers of life
against the overpowering influence of the disease. During
the prevalence of its epidemic form, when, from the greater
concentration of the exciting causes, more malignant effects
are produced on the constitution, and to which even acclimatés
are subject; then these remedies, during this period, are of
great service :—the carb. ammoniæ. acitat. of ammon. spirit,
æther. compos. To these we prefer the spices of the country,
given either in infusion or tincture. Nature is always provi-
dent in her provisions, and we shall find, all countries that
abound in endemic diseases, provide, on the very spot from
which they originate, remedies most fitted for either their cure
or counteraction. Purgatives frequently prove of advantage in
this period of yellow fever, but they should be always combined
with aromatics and other stimulents, as circumstances may re-
quire. When administered in this manner, they not only assist
in shortening this stage, and promoting a moderate excitement,
but also bring off the corrupting and irritating fæces and
diseased secretions; which if allowed to remain, always tend to
exacerbate the disease, and induce the gastric and enteritic
symptoms. Those purgatives that promote the biliary and
other secretions should be preferred.

M. Devèze lays down no plan of treatment for this period
of the disease; indeed, according to the view he takes, he con-
siders the disease to commence with the stage of excitement.—
" Dans la premiere période, j'ai fait voir qu'il existait tous les
symptomes propres à l'éréthisme général."—But a physician of
the experience of our author could not overlook this period
of ailment, although, for the reasons already assigned; it fre-
quently does not fall under the cognizance of the practitioner.
But he is perfectly aware of its existence, and calls those

symptoms to which we have given the name of invasion—
the immediate forerunners of the disease (prodromes). While
we were aware that these were acknowledged by M. Devèze,
we expected that either some plan of cure would have been
recommended at this time, to cut short, or render more wild
the subsequent stages of the disease; or, at least when treating
separately of the various remedies, that he would have recom-
mended some of them in this period. In this, however, we
were disappointed. Nor are we the less surprized at this,
when we aver, that a judicious treatment at this period, will
not only render the disease comparatively mild throughout,
but even when resorted to early, will break the morbid con-
nexion of changes going on in the system, in the same
manner as proper means-employed in the cold stage of an ague
shall mitigate or shorten the paroxysm; for there is a period
in all fevers analogous to the cold stage of an intermittant.

In the second period, or that of excitement. This stage, in
unacclimatés, is generally sufficiently perceptible. But in those
who have been a considerable time resident in a tropical cli-
mate, or who have previously suffered from disease, it may not
be distinct, or, it may be of irregular development. When
there is considerable determination to the brain, as is generally
the case in those of a full habit, and sanguine or irritable
temperament, blood-letting should be immediately employed.
When these symptoms arise in weak constitutions, or in those
who have resided long in the country, the physician will be
guided by the strength of the pulse, and circumstances of the
case; in such individuals we have employed local blood-letting
with advantage. But in the subject lately arrived from Europe,
copious venæsection is requisite, in order to ward off danger
from any important viscus, as also to prevent the excitement
advancing to such a degree, as might terminate in a fatal
collapse. Proper attention should be also paid that the period
has regularly suspervened, or is in existence at the time gene-
ral blood-letting is employed; for, if resorted to while the
stage of invasion continue, the powers of life may be entirely
overpowered. We recollect an instance wherein it was thus
prescribed by ourselves, at this too early period; and which
very nearly proved immediately fatal.*

---

* This case was in many respects singular; excitement was apparently existing
in the biliary organs, and before it was fully produced through the system, he was
submitted to the operation; four ounces had scarcely been taken when he fell into
so continued a state of syncope, as to require some hours of exertion from diffu-

Blood-letting is a remedy which ought not to be employed without due consideration, among Europeans resident in, and who are under the necessity of residing during their illness and convalescence, in the very place in which the causes of the disease are continually generated. Several of our own writers upon this subject, who have principally experienced the disease among robust seamen, living fully, and upon a considerable portion of salt provisions ; by which they were thoroughly imbued with the phlogistic diathesis ; having witnessed in such individuals the good effects from copious evacuation, have generalized with a confidence which their field of experience do not entitle them to. Nor should it be forgotten that a great proportion of those thus treated, were either completely removed beyond the continued influence of the causes ; or then, were placed in situations much less obnoxious to them. We do not, nor would we wish to argue against the judicious and discriminating employment of this valuable remedy in the hands of the well educated ; we would only caution the confident or ignorant, who Phaëthon like, would mount the chariot of Apollo. When this remedy is determined on, from the state of pulse, pulsation of the carotids, appearance of the eyes and countenance, &c. one copious evacuation from the arm, temporal artery, jugular or frontal vein, should be taken in a sitting position, in preference to frequent small blood-lettings ; these exhaust the system without making an equal impression on the disease. The quantity to be taken, as well as the necessity of repetition, must be according to the effects produced. When the determination to the head is great, in addition to copious blood-letting, cold applications should be constantly applied to it, while the rest of the body should be plunged in a tepid bath, under 90° of Farhnheit. When none of the abdominal or thoracic viscera are affected, cold effusion or the shower bath may be employed ; but unless the skin be dry we have seldom found much advantage from it. During this stage when the excitement is either irregularly developed, or confined to one or more important organs, while the surface remains dry, the heat acrid upon the trunk, while the extremities and face are shrunk ; the tepid bath should be resorted to, with continued frictions of mustard or capsicum over the surface

---

sive stimulants and frictions, before reaction supervened. Venæsection was then had reccurse to, and within twelve hours from the nearly fatal attempt, fifty ounces were taken from him, without producing any considerable effect upon the pulse, or existing symptoms. He soon rapidly recovered.

and along the extremities; blood-letting, general or local, may be employed according to the state of the pulse and organ chiefly affected, keeping in prompt recollection the circumstances of the patient; and with proper attention to the state of the pulse during or after the evacuation. It is impossible to lay down rules so as to meet the exigencies of every case, and to do so with a general recommendation would be only misleading the inexperienced. The practitioner must judge, and must think for himself on this important subject; if he do not, we envy not his passive state of existence, and (to him) happy bluntness of feeling. We recollect meeting in a tropical country, a practitioner holding a most important and responsible appointment in a most noxious climate; he was lately from Europe, and full of the doctrines promulgated by the ultra-phlebotomists in this disease. He bled, because it was recommended; he prescribed, without analysing its phenomena; and the first nine patients died that he treated. This arrested his arm, and it was some time before nine subjects more came under his care. In about one half of these blood-letting would have been proper, had it been either well-timed or duly proportioned.*

We differ from M. Devèze in the employment of this remedy; not however in the period in which it should be employed, nor in the symptoms which call for its use, but in the quantity, "mais il faut les faire petites." He adds, "en les faisent petites, on a la faculté de les répéter, selon le besoin." He frequently insists upon their being made small. The practice of M. Devèze having been chiefly among his own countrymen, in whom the disease neither appears under so sthenic a form, nor would copious depletion be of so signal advantage in a greater proportion of individuals, of their constitution and habit. Our author justly condemns the use of emetics in this stage. Towards its termination the severe head-ache is frequently mitigated, and the violent irritability of the stomach increased. Both of these prominent symptoms equally forbid its exhibition; which, if ventured on in the early part of this stage, might endanger the life of the patient, either by increasing that determination, or by obstructing the return of blood from the head, and giving rise to effusion; or then, by the irritation

* This gentleman became afterwards a great opposer of all sanguinary methods of cure, alleging his own experience. Thus many excellent remedies, if it were not for their judicious employment, would, from indiscriminate use, sink into undeserved neglect.

thus directly applied to the very tissue, in which diseased action is about to commence, or has already entered on full operation; and which, at this period, possesses an exalted sensibility. As this stage proceeds, the irritability of this organ increases, and is indeed frequently the most prominent symptom, especially when the patient has not been submitted to proper treatment, either during the period of invasion or in the commencement of this. Under these circumstances, we have always found the application of a very large blister over the epigastric region, and extending to the pubis, overcome the internal irritation. When such an application will not be submitted to, fomentations of a strong decoction of capsicum, or a cataplasm of the same, should be applied in this situation, with frictions on the inside of the thighs and legs. In this state of the system, effervescent draughts from the carb. ammoniæ and lime juice, will be found an excellent adjuvant, and should be the only form of effervescent mixture resorted to. If this distressing state continue, and especially in the weak and irritable, about thirty drops of tinct. capsici annui, with ten of tinct. opii should be given in each draught; or, small doses of this last medicine in the form of a pill. Under some circumstances a very large one of hydrarg. submurias with opium has had a good effect. Purgatives require great discrimination in their employment at this period. In the more ardent forms of the disease, they cannot fulfil the chief indications, with which they are given in this country; they can neither make an impression upon the disease, nor by the irritation which drastic purgatives make upon the intestinal canal, could the determination to the head be diminished. We are confidently of opinion, that, not unfrequently, the very immoderate and indiscriminating manner in which they are often prescribed, materially tends to induce, or to aggravate that state of disease which generally supervenes in the first passages. The principal indication with which we have ordered their employment at this period, was to carry off offending matters and morbid secretions from the digestive and biliary organs. If the symptoms indicated no active inflammatory action proceeding in the liver, the hydrag. submurias, combined according to circumstances, and not unfrequently in large doses with opium, we have found of great advantage. When judiciously ordered and combined, it will generally be of greater service; and the risk of doing harm will be less from its use, than from any other purgative. Whenever symptoms indicating inflammation in the mucous membrane of the digestive canal are present, active purgation must be hurtful. In

the milder form of this disease, or in its remittent type, when those symptoms are not present, it may be employed; but deobstruent purgatives should be preferred; they generally evacuate the acrid secretions from the gall bladder and first passages, and by those means remove a great obstacle against he return of healthy action in the system.

Diaphoretic medicines seldom are of any service in this disease. The form we have chiefly exhibited is the effervescent mixture already recommended. Serpentaria and contrayerva we have also employed in some cases, but with no striking advantage.

During the excitement the thirst is continued, and is always a great cause of distress to the patient. From its originating in the inflammatory action going on in the stomach, it is evident, to subdue the latter is the readiest means to allay the former. Cold draughts, with a few drops of the muriatic or nitric acids, are generllay much sought after by the patients, but they produce no permanent relief, and often aggravate the retching; it will, therefore, be better to employ immediate means of allaying these distressing symptoms, in the manner already recommended; afterwards any medicated infusion, or judiciously directed treatment, will be found to produce more certain advantage. Where the burning sensation in the stomach is great, we have found most decided benefit from giving nitre in small and repeated doses.

The third stage will, from the concourse of symptoms we detailed, be readily recognized as requiring a different method of cure from the period immediately preceding it. Instead of evacuation, the system now reduced from previous excitement, or else by the means employed to avert its dangers, requires in many cases the support of powerful and permanent stimulants. These should be at first administered with due caution, and with attention to the effect they produce. When, through the course of the disease, the period of excitement has either not appeared, or has been imperfectly developed, and the energies of the system proceeds with rapid strides to a fatal termination, the means about to be recommended should be strenuously and decidedly employed. This should also be the case after the nervous influence has been subdued by either the violence of re-action, or by the usual means employed to reduce it. When, however, the symptoms of consequent debility exist in no very urgent degree, the means resorted to in order to restore the vital energy, should be of no very active nature, lest a degree of irritative excitement be kept up in the system, which may overturn the changes conducive to the healthy

state : in such cases stimulants, and even food, should be given in moderate and small quantities, and the action of the bowels and biliary organs regulated by the usual treatment.

In very malignant cases of this disease, this stage is frequently alarming, and often terminates fatally. The remedies to be employed, must be according to the exigencies of the case, and the effect they produce. We should never trust to one only, two or more ought to be resorted to, in such a manner as to co-operate, and ensure each other's effects. All active evacuations, it must be evident, would be worse than hurtful to the patient while in this state ; yet such gentle means should be used, as may be sufficient to promote the evacuation of offending matters, and the diseased and irritating secretions. For this purpose enemata are the best suited, but their action is not always sufficient. We have found a strong infusion of either the capsicum annuum. or C. Frutescens, given alone, or in conjunction with a laxative, fulfil the double indication required at this stage, namely, to evacuate the corrupting contents of the prima via, and support the general vigour of the system. By employing this spice in the form of infusion, not only are the bowels comfortably evacuated, but also the nervous energy of their internal membrane restored, in such a manner as to subdue that species of inflammatory action, previously existing in it. This is evinced by the great relief it affords from the retchings, and tenderness at the epigastric region.

The warm bath above 100°, either in a simple state, or with salt, or the hot spices of the country infused in it, should be employed with frictions, after leaving it. in the manner formerly recommended.

If the application of a vesicatory over the epigastrium has been neglected in the second stage, it may be applied in the early part of this, but a blush of inflammation should be previously excited by moderate friction. The absorption of the cantharides that takes place will, in some degree, tend to keep up the vital energy.

The inflammation going on, in the internal surface of the digestive canal, is always of an asthenic character, and more especially so in this period. This is indeed evinced by the relief experienced from stimulants, which the exigencies of the system require to be frequently given, but with due attention to their effects. They will most essentially benefit the severe gastric symptoms, often existing in this stage of the disease. For this purpose we can recommend the following medicines :—When the intermittent pulse, continued vomiting, and sinking of the features, and mental despondency, indicate the existence

of collapse; bottled-porter, spruce, madeira, brandy and water, capsicum in large doses, carb. ammoniæ, camphor, musk, ol. terebinthinæ, &c. We must leave the practitioner to determine on their individual adoption, according to the circumstances of the case. But this we can assure him, that to their employment in large and frequently repeated quantities, when the vital energies were falling; and by being attentive to the phenomena they have produced, we have been indebted for the lives of patients, who would not otherwise have recovered.

In this very hasty and imperfect sketch, we have purposely omitted two most excellent remedies; because, generally speaking, their employment would be even hurtful in the continued type of this disease. Our limits (already exceeded) permit only a few remarks on their use.

Mercury.—In the continued and concentrated form of yellow fever, the cure by mercury should not be trusted: in the European lately arrived in a warm climate, its use merely paralyses more proper measures; during the stage of excitement it can never affect the system, for evident reasons; and we can reiterate the remark made frequently by other observers, that those who have recovered from its use would have recovered notwithstanding.

In mild remittent cases, when there is considerable disease in the hepatic system, and if dysenteric symptoms are present, or supervene on the remittent form, as it is apt to do in the long residenters of a tropical country, mercury then becomes of great service, and should be administered by friction over the hypochondria, or internally; blood-letting, when indicated, should precede its use; the action of the mercury will by that means be better secured.

Bark is seldom required in this disease; it may in the form of tincture be admissible in the last stage, or during recovery. In the mild and distinctly remittent type of fever, it is frequently an excellent remedy, especially if the bowels and biliary system have been well evacuated. When the paroxysm terminates with a free perspiration, and the pulse becomes soft, full and natural, and the skin soft and perspirable, and no internal organ affected;—under such circumstances, we have given it with about ten grains of the powdered capsicum, and twenty drops of the tinct. opii, in madeira and water, with great benefit. Under other circumstances we have never ventured on its use, from the conviction of it being contra-indicated.

In detailing the method of cure, we have given our own. That recommended by M. Devèze is generally inert and insufficient; but otherwise than being so, it cannot be accused of

being hurtful. Notwithstanding the number of medicines and different plans of treatment generally recommended, and even lauded with no small endeavours after effect, we conclude from that which we have seen; that no method of cure, nor individual remedy, can be of any service in this disease, unless most judiciously and promptly employed.—" Nullum ego," says Boerhaave, " cognosco remedium, nisi quod tempestivo usu fiat tale."

While we undervalue indiscriminate plans of cure: we put the greatest confidence in their proper and decided application, when embracing the broad view of the nature of the causes, the phenomena they induce, and the circumstances of the patient; and no one can have more substantial reasons for exulting in his power over the physical world, than the physician who is actuated by those philosophical principles.—

Desine quapropter, novitate exterritus ipsa;
Expuere ex animo rationem; sed magis acri
Judicio perpende; et si tibi vera videtur,
Dede manus; aut, si falsa est, accingere contra.—Lucretius.

TO OUR READERS.

As many of our Readers have objected to the plan we have occasionally adopted, of dividing articles, we have been obliged considerably to exceed our usual limits, in order to give the important paper contained in the present Number unabridged. This has necessarily obliged us to postpone several interesting cases intended for Analecta.

Through the kind and liberal attention of our esteemed co-temporary Dr. Johnson, Editor of the Medico-Chirurgical Journal, we have just received the continuation and conclusion of Dr. Breschet's excellent article inserted in our present Number; we shall lose no time in laying it before our Readers.

Communications to the Editor may be addressed to Mr. Anderson, Medical Bookseller, 40, West Smithfield.

CONTENTS.—N° X.

* ERATA.—For the Title of Article 4th, Page 177, read as above.

THE

QUARTERLY JOURNAL

OF

FOREIGN MEDICINE AND SURGERY.

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

APRIL, 1821.

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

ART. I. *Considerations et Observations Anatomiques et Chi-*
rurgicales sur la Formation, la Disposition, et le Traitement
des Fistules Stercorales et des Anus-contre-nature. Par
Gilbert Breschet, Docteur en Médecine, Chef des Travaux
Anatomiques de la Faculté de Médicine de Paris, Premier
Aide de Clinique à l'Hôtel-Dieu, Professeur particulier d'Ana-
tomie et de Chirurgie, &c. Part II.

[Communicated through DR. JAMES JOHNSON.]

(CONTINUED FROM NO. IX. VOL. III. PAGE 99.)

FIFTH OBSERVATION.

FELIX FEUILLET, aged thirty-two, and affected by a complaint
which appeared to require the employment of an emetic, took a
medicine of this kind, the operation of which occasioned efforts
that caused the appearance of a tumour, above and in front of
the bend of the groin on the right side. This tumour, scarcely
as large as a nut, without any change in the colour of the skin,
and not painful on pressure, returned with facility, without
giving rise to the slightest bad symptom. Ten years passed in
this manner : the least contraction of the abdominal muscles,
which tended to diminish the capacity of the belly, caused the
descent of the hernia, which could be reduced by slight pressure.
It increased in size.

At the age of twenty-one, the frequency of the descents, the

pain which accompanied them, and the augmentation of size when the patient follows his trade as a carter, oblige him to confine his tumour; for this purpose he employs a linen bandage supporting a pad fixed on a piece of wood. This imperfect method sometimes allows the escape of the hernia, but during eight or ten years, emollient cataplasms and rest suffice to quiet the pain, to reduce the swelling, and to permit the reduction of the tumour. When this, however, is impelled by a force superior to the resistance of the contentive bandage, it overcomes the pressure which it makes.

Each time the difficulties increase—every time the reduction requires a longer period. February 17th, 1815, a powerful effort expels from the abdomen a larger quantity than usual of the contents of the hernia. The tumour, which is larger than a pullet's egg, painful and tense, does not yield to the ordinary measures. The patient drinks some drops of wine, and is soon seized with colic, nausea, hiccup, and vomiting. The matters vomited have the smell of excrement; no evacuation takes place by the anus.

A surgeon is called the day after the accident; he prescribes emollient cataplasms, baths, bleedings, and attempts the taxis several times; in short, he employs every method, but in vain; the hernia does not return. Timidity or ignorance hinder him from performing an operation that every thing indicates. He flatters the patient with the vain hope that his hernia will return, and it is not until the tenth day that another surgeon is called in. This one defers acting until the following day; he thinks the operation may be done without exposing or dissecting the sac : he contents himself with making an incision through the skin, which is livid, brownish, and thinned by gangrene. The fæcal matters then pass outwards; all the circumference of the wound falls into gangrene; a circular opening, about three inches in diameter, leaves exposed the two extremities of the intestine situated at each angle. The extremity placed at the outer side pours forth the fæcal matters, at first liquid, then solid : the patient grows thin. The matters in flowing out irritate, redden, and render painful the circumference of the wound. The skin is affected to the thigh. A leather bag, and then a wooden box, lessen for three years the inconveniences of this infirmity. Once a week only there pass by the anus some cylinders of hard white matter, approaching more closely to the fæcal state as they are longer retained. The patient enters the Hôtel Dieu, July 12, 1818, in the hope of being treated and operated on by M. Dupuytren.

The patient, now aged thirty-two, is stout, well proportioned, of a sanguineo-bilious temperament; he has a good appetite,

and his " moral" is in the best state. At the internal angle of
the wound may be seen a tumour, red, firm, unequal, smooth
to the touch, and covered by a mucous membrane, which gives it
its colour and its polish. Its diameter, measured at its insertion,
is eighteen lines, and its length twenty-four lines. In the
middle of some folds of the mucous membrane, is an opening
of some lines, the circumference of which is formed by a mucous
band ; a probe introduced into this opening penetrates deeply.
From it flows some whitish liquid mucosities. Pressure made
on this mass repels it, or applies it to the edges of the wound.
The base is felt to be adherent to the circumference of the loss
of substance in the abdominal parietes. Near this base exist
some ulcerated suppurating points. At the external angle of
the wound, when the patient is in the horizontal posture, when
he does not make any strong respiratory movement, or any mus-
cular effort, is seen a circle formed by a mucous membrane, red
like that which covers the internal tumour. Its diameter is an
inch ; the finger introduced into the centre of this circle, reaches
a canal easily dilatable, passing upwards and a little inwards.
By this opening pass the fæcal matters, half liquid and of a
greenish yellow colour.

If the patient walks, sings, or makes a prolonged expiration,
the interior of the canal unfolds itself, and passes from within
outwards ; it thus descends half way down the thigh, forming
a hollow cylinder composed of a central cavity, communicating
outwards, lined by peritoneum. The mucous membrane pre-
sents on its exterior its valves reverted ; it is humid, and of a
vermilion colour. If the intestine remains long out, it becomes
violet coloured, painful, and swelled. The patient hastens to
replace it. At some points are to be seen portions of mucus ;
three tubercles are also to be remarked, firm, unequal, with
flattened summits, and of a yellowish white. This cylinder,
eight or ten inches long, is agitated by alternate motions of
contraction and dilatation. It forms a curve upon the thigh,
the convexity of which is turned outwards ; these two extremi-
ties of the intestine have a beating isochronous with that of the
heart. A portion of mucous membrane, which is never spon-
taneously reduced, adheres strongly to the edge of the solution
of continuity in the skin, and serves as a means of union between
it and the mucous membrane which lines the intestinal canal.
When the patient coughs, the internal tumour is raised ; the
scrotum on this side fills, and the testicle is driven forwards. It
is easy to see that a hernia has formed behind the insertion of
the inferior end into the wound.

It is evident that the internal tumour is an old eversion. It

is considered that this tumour of the inferior extremity is irre-
ducible, or that it is impossible to unfold from without inwards
the everted anal extremity. Attempts are, however, made to
destroy the invagination of the intestine ; they are unsuccessful.
Tents successively increased in size are daily introduced into the
opening. The motions of the patient cause the disappearance
of two tents, which are buried in the cavity. The sixth day
after their use, the finger is carried up the dilated cavity in
search of them. On the seventh day it is perceived that the
ulceration existing at the pedicle of the tumour gives passage to
the tents. A little swelling and pain exists in the tumour, and
extends into the scrotum. On the following day these symptoms
have ceased. The ulceration extends daily ; the use of the tents
is abandoned.

July 30 :—A new eversion takes place near the ulceration ;
it destroys the base of the tumour. A small portion also of the
intestine which forms the edge of the ulcerated surface falls
down.

July 31 :—Eighteenth day from the entrance of the patient,
and seventeenth of the employment of tents, M. Dupuytren
determines to employ the enterotome, well assured that this
instrument does not divide the parts until it has caused their
adhesion with those surrounding them. He includes the base
of the everted portion on a level with the wound between the
branches of this instrument.

The first hour after the application of the instrument is full
of suffering. Pains and gripings, beginning in the intestine,
spread themselves over the abdomen ; a general uneasiness and
disturbance agitate the patient in bed. At night the pain is
lessened and only exists at intervals. Slight colics are still felt,
beginning and radiating from the tumour, but more seldom.
He does not sleep ; his face is a little flushed, his pulse a little
increased in frequency, but not full or developed ; his skin is
hot ; he feels an appetite, and wishes to satisfy it. Already the
parts most recently invaginated are of a violet livid hue ; the
old portion presents a brown colour and a gangrenous œdema.
The forceps are screwed a little tighter than they were.

On the third day from the application of the forceps, there is
no pain in the abdomen ; the patient has an appetite and good
spirits ; the sensation caused by the constriction which the in-
strument makes is obscure, and the patient seems to pay little
attention to it. On the two next days, the fourth and fifth, the
gangrene and putrefaction proceed.

On the sixth day the patient, incommoded by the putrid mias-
mata which escape from the dead parts, requests M. Dupuytren

to remove them. Those parts beyond the forceps are dissected away; those comprehended between the blades being still attached to the living parts, their premature resection might be followed by laceration of the newly formed adhesions. The invaginated intestine presents some violet coloured membranes.

The eighth day the forceps are removed; they would soon have fallen spontaneously; already suppuration had separated the parts to which they are fixed. An irregular wound, moistened by a little greyish suppuration, occupies the situation of the destroyed parts. In the centre of this suppuration is seen the opening of a contracted canal, whence flows a greyish fluid : a female catheter is introduced, it passes deeply inwards towards the cavity of the pelvis. The calibre of the intestine is felt to be much contracted.

In the neighbourhood of the section the tumefied parts have resumed their natural size ; a sound is introduced into the extremity situated within and corresponding to the anus : it does not penetrate above an inch. The canal is so contracted as not to admit the entrance of the little finger. Rolls of charpie are employed for some days, to dilate the lower extremity, and the finger soon enters with facility. The health of the patient continues good during these attempts. He requests permission to go to see his friends, which is granted. In the evening he returns in a state of suffering. His countenance is disturbed, it expresses depression ; it is yellow, leaden : his features are sunk, his eyes hollow; he is unquiet, sad, and locomotion is difficult. The abdomen is retracted, painful on pressure through nearly its whole extent, but apparently more so in the vicinity of the artificial anus. Inspiration is short and interrupted from the pain which motion of the abdomen causes. The skin has lost its natural heat ; the pulse is depressed and frequent ; the tongue is a little white ; the patient has had several liquid stools, of a greyish white colour. Forty leeches are applied, clysters and an emollient ptisan prescribed. At midnight the symptoms still continuing equally severe, the surgeon in attendance again applies fifteen leeches.

On the morning of the eighteenth, the pain in the abdomen is a little diminished. The superior extremity of the intestine everted, does not return spontaneously ; this prolapsus is eight inches in length. It is at last returned by cautious pressure made with a cloth smeared with cerate. There is constipation, suppression of urine. Baths are prescribed with emollient clysters, gummed water and low diet. Towards evening forty leeches are applied to the abdomen, a bath has been administered, the patient has made water, he has had a long shivering fit, his

respiration is frequent, but he says he has no pain in making a deep inspiration ; his voice is changed, plaintive and weak.

The pulse is more frequent, oppressed, small, easily compressed ; the skin is hot, unctuous, with sweating on the face ; the cheeks are coloured in patches ; the tongue is rough and dry, with a whitish coat ; the thirst is extreme. The artificial anus is tumefied, as well as the scrotum on the same side, Some spoonfuls of ptisan have produced efforts to vomit, which have forced out the superior extremity ; the surgeon in attendance reduces it ; the constipation still continues. During the night there is want of sleep, and some attempts to vomit.

August 19th, six *a. m.*—The pulsation of the radial and humeral arteries cannot be felt, those of the carotid are scarcely perceptible : respiration is frequent, hurried, and less painful. His voice is lost, his hands are cold, his belly is a little swelled, the pain is principally felt in the epigastric region, and in the course of the ascending colon ; it is not constant. The eyes are more haggard, the pupil dilated, and in constant motion. The patient is restless, his intellectual faculties are perfect, the constipation continues with the same obstinacy ; there is a slight tumefaction of the mucous membrane and scrotum. Leeches are applied to the epigastric region, sinapisms and vesicatories to the extremities. These means are ineffectual : the patient dies at nine in the morning, in a convulsive motion.

Examination of the Body : Digestive Organs.—The whole of the peritonæum is covered with greyish pus, mixed with some violet streaks.

A flap of the abdominal parietes having been turned downwards, two portions of intestine are seen passing towards the artificial anus, united by a prolongation of the mesentery, tense and stretched, about an inch wide near the opening out of the abdomen, but rapidly increasing in width, which depends on the angle that the two ends of the intestine form in passing towards the vertebral column. The extremity of the intestine placed at the internal angle at first goes inwards, descends towards the pelvis, and then bends outwards, passing behind the prolongation of the mesentery which goes towards the wound. The extremity placed on the outer side ascends towards the right ilium, then bending inwards and in front of the lower extremity, crosses its direction, and having made many turns goes into the pelvis.

A circular cavity is prolonged in the substance of the abdominal parietes to more than an inch below the loss of substance in the integuments. The deepest part of this depression is formed by the eversion of each end of the gut, the coats of

which adhere to the extremity of the opening in the integuments, by a layer of fibrous, thick, and dense matter. The peritonæum lines all this prolongation in such a manner, that in the part of its surface, extended from the edges of the skin to the orifice of each end of the gut, there is only the thickness of the intestinal parietes to separate the exterior of the wound from the interior of the abdomen.

Within and a little below the point of insertion of the inferior extremity into the skin, a prolongation of peritonæum descends to the back of the testicle, crosses behind the spermatic vessels, slightly separated, from within outwards; these vessels turn round the bottom of this cavity to reach the testicle. No serous cavity appears to exist in the scrotum, but a fibrous coat nearly a line thick covers the testicle; it results from the obliteration of the tunica vaginalis. The hernia appearing to be congenital, it was into this cavity that the inferior extremity passed.

This patient manifestly perished from the effects of an error in diet. The treatment of this complaint gave the greatest hopes of success when inflammatory symptoms followed an indigestion.

SIXTH OBSERVATION.

Charlotte Françoise Douchy, aged fifty-six, had a crural hernia for eight years, which she had never supported with a truss; it could generally be reduced with facility.

December 22d, 1816 :—The hernia having descended, she was unable to return it. To this succeeded colics, eructations, nausea, vomiting, hiccup. A surgeon called in in the evening, having in vain attempted the taxis, prescribed emollient cataplasms, and recommended the patient to remove to an hospital. This she refused, and remained at home eight days, suffering all the symptoms of strangulation, and vomiting fæcal matters. On the ninth day, December 31st, she came to the hospital, by the advice of a surgical bandage maker, for the purpose of submitting to an operation.

At the evening visit she was in the following state : face pale, efforts to vomit, violent colics; the abdomen, without being tense or inflated, was painful and very sensible on pressure; no alvine dejection had occurred since the strangulation commenced; the pulse was small and frequent; below the left crural arch was a tumour as large as a small egg, deeply placed, circumscribed and renitent.

The operation was proposed and immediately performed; a transverse incision in the line of the crural arch, three inches long, divided the skin, cellular tissue, and fat. It was made

crucial by an incision carried through its middle from within outwards. The subjacent cellular tissue, inflamed and suppurating at one point, was cut through in successive layers. Below it was perceived a tumour deeply situated, reddish and polished, which had every appearance of the hernial sac ; this was a lymphatic gland which covered and closely adhered to it : it was dissected with all due caution. The hernial tumour was then exposed, with its blueish peritonæal covering, reduced nearly to the size of a large nut, and separated below from the surrounding cellular tissue. The sac was opened by raising it with the point of the bistoury held horizontally, and divided from below upwards on a grooved director ; a small quantity of greyish fœtid serosity escaped. A portion of the calibre of the intestine, an inch, or an inch and a half long, and half an inch wide, was strangulated ; it was of a greyish white colour, flaccid, and evidently gangrenous. The eschar was divided with the point of the knife, and less than half a spoonful of fæcal matter flowed away.

The surgeon introduced his finger to the neck of the sac, and assured himself that the intestine adhered to it in its whole circumference, that the calibre of this intestine was as it were obstructed by the constriction formed by the arch. In this case the adhesions between the neck of the sac and the intestine might have been destroyed, the latter drawn outwards and fixed by a thread, and a favourable opportunity thus afforded for the cure of the artificial anus by pressure. The operator preferred the proceeding which Arnaud had employed in a similar case. It consists in introducing the bistoury into the canal of the intestine, and dilating by cutting through the intestine, the neck of the sac, and the arch. This dilatation was made with the curved probed bistoury, and with great caution, from the fear of carrying it beyond the adhesions, and giving rise to a stercoral effusion into the abdomen. This caused the flow of a pretty large quantity of whitish liquid fæces through the wound ; frictions on the abdomen with the hand favoured its issue. The wound was cleansed, but not dressed, in order to allow a free course to the fæces. The belly was fomented, and whey with nitre prescribed.

On the next day, January 1st, the symptoms of strangulation have ceased ; pretty copious evacuations have taken place during the night from the artificial anus. The belly is swelled and painful ; there is vomiting, depression ; the face is pale, the pulse is small and weak, but not frequent. The same prescription. At two o'clock, agitation, with plaintive cries, and prostration of strength. At three, death.

Examination of the Body.—The peritonæal coat of the small intestines was injected, covered in some places with a false

membrane, soft and of a whitish colour. Some convolutions adhered slightly by the intervention of this membrane. There was a little purulent serosity in the pelvis, but no effusion of fæces into the abdomen had taken place. The intestine which had been strangulated and destroyed by gangrene, was the ileum. The surgeon introduced his finger from below, which entered the upper extremity and penetrated the abdominal cavity, by an opening situated at the front part of the calibre of this extremity. Was this opening, which admitted the point of the finger, the effect of the propagation of gangrene above the point of adhesion ? or had it been the result of the destruction of the adhesions after death, the instrument employed in the dilatation not having gone beyond these adhesions ? The last is most probable, and observation has several times shewed the fact. If the instrument had gone beyond the adhesions, is it not likely that effusion would have occurred ?

The two extremities of the intestine united at an acute angle, in the edges of the wound, below the crural arch. They adhered to the circumference of the sac ; the superior placed on the inner side was directed from the umbilicus, from above downwards ; the inferior placed on the outer side passed from within outwards towards the iliac fossa. This situation, if it be not constant, is at least most frequent ; for it was similar in four other patients. The portion of the intestinal canal continuous with the superior end was distended by gas and fæces, whilst that which corresponded to the inferior extremity was empty, contracted, and of the shape of a cat's intestine. This difference in the state of the two portions of the intestinal tube is constant, and alone suffices to distinguish at first sight the superior from the inferior extremity.

The intestinal angle presented on its interior a fold, the projection of which prevented the passage of the stercoral matter from the upper to the lower end ; in front was the opening made in the intestine by gangrene, whence the fæces passed ; it was an inch and a half in extent : the edges were united to the hernial sac. In the V shaped space, formed by the two ends of the intestine, was seen the mesentery, tense and stretched from the point of union of either end, to its attachment to the vertebral column ; it presented longitudinal folds caused by this sort of dragging, and by the angle formed by the gut. In this space there were no circumvolutions intermediate to the two extremities, so that by the application of the forceps these parts might have been brought into direct contact.

From this disposition it is evident, that if it continued, the stercoral excretion must take place constantly and wholly by the

artificial anus; for in order that the excrement should pass into the inferior extremity, it must ascend, depressing the projecting band, and as it were pass out of the abdomen to flow into the inferior end. But nature modifies, changes the disposition of each end, so that the fæces which flowed altogether through the artificial anus, in time pass in smaller quantity; then dividing, pass equally by the artificial anus and the rectum, and ultimately pass altogether by the latter, the artificial anus being converted into a stercoral fistula. These changes occur particularly where there is only gangrene of a whole loop, but never when the band is on a level with the skin, and advances beyond the opening of the two extremities which adhere to the edges of the wound. Such was the case in another patient, in whom the fæces had altogether passed by the artificial anus. Here pressure would have been dangerous, and every other measure useless.

The examination of the body of this woman gave, from the disposition of the mesentery, an explanation of the favourable changes which occur in the excretion of the fæces, during the restoration of the artificial anus. Fixed on the one part to the vertebral column, on the other to the angle formed by the two ends of the intestine, the mesentery is constantly in a state of tension. As the point of attachment to the vertebral column is fixed, and presents more resistance than the intestinal angle, this angle must necessarily yield to the dragging which this tense state of the mesentery constantly causes. Hence results the recession and disappearance of the projecting band, the change from an acute to an obtuse angle, the freer communication of the upper and lower end of the gut, the more abundant issue of the fæces by the rectum, and the contraction of the artificial anus in proportion as these changes take place.

It is when the fæces pass partly by the rectum and partly by the artificial anus, that Desault's method may be employed with safety, and with the hope of success : it unites the advantages of hindering the passage of the fæces through the artificial anus, and favouring it to the rectum, and of hastening the cicatrization of the stercoral fistula.

Besides compression, Desault also employed dilatation, perhaps without having perfectly recognized its principal effect : he introduced a cylinder of charpie into each extremity, as he said, to dilate and separate these extremities. But is it not evident that the presence of these cylinders would cause the recession of the band, diminish its projection, contribute to render the angle less acute, and consequently to facilitate the passage of the excrement into the lower end ? It is thus that dilatation may be useful. Might not the extension of the ver-

tebral column, and its flexion backwards by cushions placed under the loins, be also of some advantage ? By augmenting the tension of the mesentery, it would increase the retraction it makes on the projecting band, cause it to recede, and thus accelerate the cure.

SEVENTH OBSERVATION.

Colombe Poulain, a wool-spinner, aged 37 years, of a strong and vigorous constitution, from an effort made on November 8th, 1815, in raising a bucket of water, became affected with a large hernia on the right side, attended by all the symptoms of strangulation. Ten days elapsed, during which the patient employed emollient cataplasms, as she refused to submit to an operation. At the end of this period an artificial anus formed by the inflammation of the strangulated intestine. This patient was received into the Hôtel Dieu.

July 22d, 1816 :—M. Dupuytren attempted the application of his forceps ; being persuaded of the existence of the two ends of the intestine, (separated by a septum, and united at a considerable angle near the wound in the skin,) from having made repeated examinations with the sound and the finger, which, by the dilation they caused, produced a flow of blood from the artificial anus. Each branch was guided on the finger into the part of the intestine for which it was destined ; both were then united by their joint and screwed, so as to compress the two lamellæ of the septum, separating the intestinal extremities from each other : the two ends of the instrument projecting from the wound were surrounded by charpie and a compress. Some colic and nausea ensued soon after this operation, but the application of emollient cataplasms to the abdomen caused the speedy cessation of these slight symptoms. By taking liquid food, and in small quantities, the state of the patient continued very supportable until July 25th. Towards the evening of this day the colic and nausea returned ; together with fever there was a considerable degree of thirst, and a very frequent pulse : the application of emollient cataplasms was frequently renewed : the instrument had been put out of its proper position, but was speedily replaced.

On the morning of the 26th all the symptoms had disappeared. In order to prevent their return during this state of irritation, M. Dupuytren made no particular examination until the 28th, when he found the part of the septum embraced by the instrument a little separated, though it appeared to have succeeded but imperfectly. The patient only complained of slight pains around the exterior of the artificial anus, through which the fæces passed, in spite of numerous injections.

August 5th :—M. Dupuytren reapplied the instrument, the width of the branches being diminished, to obtain more surely a deeper separation. The patient felt pain in proportion as the screw was more or less tightened; this pain soon affected the whole body, with efforts to vomit, and increased in spite of the application of emollient cataplasms, so much that it was necessary to diminish the degree of pressure made by the forceps. At three in the afternoon the instrument was detached from the part to which it was applied by an effort to vomit, and was totally removed. All the symptoms were directly lessened, but the pain in the abdomen was increased by external pressure. The fever and thirst hindered the patient from sleeping during the night. The symptoms continued although growing gradually less until August 8th, when, after a large evacuation of fæces by the artificial anus, the patient was tolerably restored.

August 9th :—An attempt was made to procure natural evacuations, by an apparatus of charpie and compresses placed on the artificial anus. Nothing resulted but a slight greyish glairy dejection, probably the result of the secretions elicited from the mucous membrane by many injections : As the compression fatigued the patient it was given up. M. Dupuytren then caused the form of the forceps to be changed, as they appeared to be neither solid enough to seize and retain the parts, nor well adapted for effecting their separation.

August 22d :—M. Dupuytren employed the new instrument on the same patient. At first he pressed very slightly that part of the front of the septum comprised between the blades. The pain was exactly proportioned to the degree of pressure employed. From this circumstance, from the impossibility of withdrawing the instrument, and from the precaution employed in its introduction, it seemed certain that the part had been properly grasped, and that its separation must follow. The application was followed by slight colic and vomiting, thirst, a white tongue, and loss of appetite. Emollient cataplasms were ordered to the abdomen, and weak broth only allowed. These symptoms of irritation diminishing the pressure was gradually augmented, and always with less effect on the patient.

August 29th :—Very little of the fæces passed by the artificial anus, and there were five natural stools at short intervals : the same day the instrument was found more deeply placed in the wound, and yielded to the slightest movement; its branches were firmly fixed by the screw, and on opening it a piece of flesh was found on the grooved branch an inch and half long, and about two-thirds of a line wide, which had probably been separated from the intestines by the cutting edge of the male branch.

The change of the artificial anus into a simple fistulæ is a surprising proof of the efficacy of this method.

August 30th:—This patient is going on perfectly well: small injections are given to promote the natural stools; other evacuations took place on the following day without these means, and very little fluid fæces passed through the fistula.

From the 1st to the 4th of September she enjoyed perfect health, took without inconvenience her ordinary food, and remained horizontally placed in bed. Natural stools were always excited by small injections.

M. Dupuytren had not yet employed any measures for repressing the mass of red spongy flesh in the wound, or for replacing a little prolapsus of the inner membrane of the intestine, or closing the opening of the fistula, whence still flowed a little coloured liquid, having scarcely the character of fæces. The fistulous wound was only covered with charpie.

From the 4th to the 6th her good health continued, pressure was made on the mass of fungous flesh, near the opening of the fistula.

From the 8th to the 12th of September M. Dupuytren daily applied an apparatus to the opening of the fistula, consisting of small compresses of lint, sprinkled with colophany, and fixed on the groin by compresses and a bandage. The woman always feels relieved by the pretty frequent occurrence of natural stools, without the use of clysters, which still, however, seem necessary. The dressings are stained by fluids only.

From the 12th to the 18th the apparatus, though changed daily, had caused inflammation and pain round the fistula; there are some symptoms of colic but of slight duration. The mass of flesh and the projection of the mucous membrane into the opening of the fistula have wholly disappeared, and hence the fistula appears to be deeper seated.

From the 18th to the 23d, in consequence of some inconvenience, the patient relaxed the dressings, which were simple; the consequence was a flow of fæces through the fistula.

M. Dupuytren daily renewed the compressive apparatus, which considerably diminished the fistulous opening; the only obstacle now was a slight discharge of fæculent matter through it, although the natural excretion was uninterrupted.

From the 28th to the 30th the patient kept her bed. The dressings were very slightly stained by fluid fæces.

October 1st.—The usual apparatus was changed for an elastic truss with a large pad, which was applied over the fistulous aperture being covered by a pretty thick compress.

From the 2d to the 15th the fistula is daily covered by char-

pie and a compress, over which the pad of the truss is applied. The passage of the intestinal contents through it diminishes daily ; the patient remains constantly quiet in bed.

In a short time afterwards this patient quitted the hospital, being free not only from the inconvenience of an artificial anus, but also from the little fistula, which no longer gave issue to any fluids.

EIGHTH OBSERVATION.

Marie Yart, aged fifty-two years, well formed, of a sanguine temperament, having menstruated to her fiftieth year, having borne eight children at natural births, eight years since, and four from her last accouchement, perceived a small tumour in the right groin, which she attributed to a strain.

This little tumour readily returned, and was kept up by a truss pretty exactly applied. During ten years the patient had suffered no inconvenience, but the truss having then become loose, a violent fit of anger caused the sudden descent of the hernia. It then increased to double its former size. The patient paid no attention to this increase, but went to bed because she felt indisposed. She soon experienced colic and a twisting in the umbilical region.

The following morning in spite of the pain she rose and wished to go out ; the colic increases—she faints : scarcely has she been carried to bed, when hiccup, nausea, and even vomiting begin : the matters vomited are at first bilious, mucous, then black with the fæcal odour. Twenty-six hours had elapsed since the commencement of the symptoms; a surgeon is called in. Taxis, baths, bleeding, all are in vain, the tumour is irreducible. The attempts to return it render it more painful, sensible, and red.

Four days had now elapsed since the descent of the hernia ; from that time the patient has not passed an atom of fæcal matter by the anus, not even gas : the stercoral vomitings continue, but less abundant, and at more distant periods. The proposed operation is at last performed on the fourth day from the strangulation. The intestine is drawn outwards, and found gangrenous to the extent of three inches. A loop of this size is cut away, and the two ends fixed to the wound in the skin by a waxed thread passed through the mesentery. The fæcal matters flow through the lower opening, and the patient is relieved. To this succeed subsidence of the abdomen, cessation of hiccup, nausea, and vomiting : repose for several hours. The fæces take their course wholly through the wound, which requires to be dressed several times a day. The two ends of the intestines contract adhesions to the opening in the integuments. The in-

flammation throws off the dead parts, the continuity of the intestinal canal is destroyed, its two extremities are isolated, their cicatrices are separate; all the fæces have a free passage outwards. An artificial anus is established.

This state lasted for two years, during which the health of the patient continued good. She passed fæces by the artificial anus differently elaborated, according to the degree of digestibility of the food. The residue of food quickly digestible passed at the end of an hour; it was in small quantity, tolerably consistent, and its colour deepened. Bread left a more abundant quantity, but vegetables and fruit, particularly those covered by a pellicle, presented themselves at the artificial anus at the end of two hours, having undergone scarcely any change; thus pease, French beans, cherries, passed entire, cabbage only a little softened; white meats afforded a digested residue, but copious and liquid; sorrel and spinach gave their own colour to the fæces. By means of clysters the patient passed every three months, by the natural anus, some dry whitish matters, in the shape of clots. Her appetite was very great. The fæces were so acrid that the edges of the wound became inflamed and painful. To remedy this inconvenience the woman's husband contrived an apparatus for receiving the fæces, which flowed within two hours after meals, and continued to do so for a long time. This will be hereafter described.

She at last entered the Hôtel-Dieu, March 3d, 1817, by the advice of the individual who had performed the operation, for the purpose of getting rid of her disgusting infirmity. The bend of the groin then presented, in the middle of its length, an oval opening, the great diameter of which running in the line of the crural arch, was two inches, whilst the short diameter perpendicular to the arch was but an inch. At the external third of this opening was seen an intestinal orifice, surrounded by a circular fold, covered by a pale red mucous membrane, projecting half an inch, particularly at the external angle. The internal two-thirds were occupied by a second circular fold, thicker, better nourished, of a bright red, making like the other the circumference of an orifice, but more dilated. Like the other also, it was formed by the intestine, which adhering to the edge of the solution of continuity in the skin, passed beyond the point of adhesion, and became a little everted. The place where the two ends of the intestine adhered presented on the surface of the wound a kind of partition, perpendicular to the line of the arch, and covered by mucous membrane. The extremity of the intestine, situated on the inner side, most dilated of the two, gave issue to

the fæces variously elaborated. A finger introduced into either end, felt the greater dilation of the inner one, whence also a more active exhalation took place. Both ends seemed to pass towards the pelvis, and at last to cross one another, the external becoming most internal of the two.

Such was the disposition of the two ends of the intestine at the external opening, when the patient only performed the ordinary respiratory motions. But when she made a very deep or long expiration, whether voluntary or in consequence of some effort, the intestine became everted, and the wound presented a new appearance. The internal surface of each extremity unfolding itself from within outwards formed the surface externally of a hollow cylinder. The cavity of the cylinder or everted portion communicating at one end with the abdomen, at the other terminated at the point of reflection of the membrane, by the uneverted intestine continuous with it and by the mesentery. This membrane, fixed to the vertebral column when the two ends were not everted, became engaged in the acute angle formed by the union at one point, of the intestinal extremities, and thus formed a single V. But when the two ends became everted, the point of this V became the point of union of the two branches of two new V's, which were engaged in the space left between the peritonæal surfaces of the everted and uneverted portions of intestine. The cavity of the part of which we have spoken above, the uneverted portion, or interior cylinder, was the intestinal cavity communicating outwards. This everted surface presented valvulæ conniventes, considerably separated, particularly on the outer end of the gut. On this last their loose edge was turned upwards, but downwards on the surface of the extremity situated most internally.

Both extremities when prolapsed presented vermicular undulations, were susceptible of voluntary erection, and inclined towards each other on the front of the thigh.

Two inches was the greatest extent to which the extremity of the intestine placed most externally could descend; its return left, as I have said, a projection of half an inch; the extremity placed internally could descend to an indeterminate distance and return completely. If the state of eversion continued long, as after violent straining, the parts swelled and became of a violet red colour; then cold water, and a slight taxis by the hand of the patient guarded with linen cloth, became necessary to effect its return; whilst, when not thus enormously increased, a deep inspiration sufficed to reduce it almost wholly. The circumference of the opening in the skin, conti-

nually moistened by fæces, was red and almost erysipelatous, being covered by little white pimples, which rendered motion of these parts painful.

The greater size of the internal extremity, the passage of the fæces through it, the disposition of the valvulæ conniventes, the abundant exhalation from its surface, pointed it out as the upper or stomachic extremity. On the other hand, the contracted, pale, and withered state of the extremity of intestine, placed at the upper and outer part of the wound, rendered it easily recognizable as the extremity corresponding to the rectum.

The sight of the band projecting on the surface of the wound, between the two portions of intestine, rendered it probable that all direct communication between them was lost; and of this the passage of white mucosities alone, by the natural anus, became another proof. To restore this communication it was necessary either to push back the projecting edge of the septum, or to remove it to such an extent as to allow a more ready passage for the fæcal matter from one extremity of the intestine into the other, than through the wound.

M. Dupuytren at first thought of employing a machine, the principal part of which was to be a crescent, with a blunt edge on its concave part, which was to be applied to the projection of the inter-intestinal septum, and fixed there by a circular bandage. This instrument would doubtless have diminished the acuteness of the angle; but the intestine pushed backwards would have dragged with it the circumference of the wound, and the communication, though more direct, would still not have been sufficiently large; the external wound would always have presented the readiest passage to the fæcal matter. The skin too on each side of the wound being dragged inwards, would have presented an obstacle to the direct union of the edges of the wound, or would at least have caused, after its closure, a depression on the surface of the integuments, with a corresponding projection internally. Hence would have resulted contraction and impediment to the course of the fæces; and if some undigested substances, or a considerable quantity of fæces should stop here, symptoms of obstruction or even of strangulation would have followed. The crescent too, by its projection, might have caused the inflammation and division of the parts to which it was applied. This division, extending too deep, might have penetrated the intestine, and formed a communication with the abdomen. The method of Desault would have had all the inconveniencies that Scarpa ascribes to it; by pressing the edges of the wound against the septum it would have interrupted the

course of the fæces, and produced all the symptoms which follow such impediment.

The industry of the patient's husband had as much as possible lessened the inconveniencies resulting from the passage of the fæces, and their contact with the surrounding parts. A box of tin, made like a flattened phial, having a neck three inches long, and of an equal diameter with the intestine, surrounded the orifice of the wound. Into the neck entered the everted intestines, and in the middle part of this neck was a grating, which prevented their farther eversion. The idea of this grating had suggested itself to the patient from the difficulty she experienced in returning the everted intestine after an evacuation. The lowest part of the box was placed on the inner and upper part of the thigh. A storp fixed round this part and another round the waist steadied the apparatus. The patient had resumed her ordinary occupations.

The grating having caused two or three ulcerations on the mucous membrane, when resting there in its everted state, fifteen days elapsed before any thing was attempted, as it was intended in the first place to let these little ulcers heal.

March 19th, sixteenth day from the admission of the patient:—The extremities of the intestines are returned as completely as possible; the blades of the forceps, three and a half inches long, are introduced separately, the male blade into the inferior, and the female into the superior extremity. Then by a rotatory motion, attempting to make them turn on each other, it is proved that each blade is inclosed within a narrow canal, and that they are separated by two smooth surfaces moving on one another, and preventing the immediate contact of each blade. This is the obstacle to the communication of the two extremities. Then articulating the branches by means of the key, and turning the screw, the blades are closely applied to the anterior part of the septum. Their handles are still separated by a distance of three lines; they are supported by threads attached to a bandage surrounding the body.

The application and constriction cause no pain to the patient; at the end of a quarter of an hour there are some slight colicky pains in the umbilical region, which the patient does not attribute to the instrument; it is, however, reasonable to think that this is the cause. In two hours afterwards she vomits two spoonfuls of glairy matter, and continues to throw up the broths she takes. Three hours afterwards she no longer perceives the instrument, but there remains a dull obtuse sensation of pain. In the evening face flushed, pulse a little raised, skin hot, eyes

bright; there is neither nausea nor hiccup. In the night alternate rest and waking, the feeling of numbness from the instrument has ceased, she is only aware of its presence from the obstacle which it presents to the eversion of the intestine. The upper extremity cannot be seen, but a few lines of the lower may be distinguished. The flow of fæcal matter is less copious than usual. Infusion of orange flowers ordered with a broth diet.

On the second day a slight degree of general irritation, appearance animated, eye bright, tongue rather white, pulse almost natural, no colic, and a free flow of urine. She has taken some broth without vomiting. In the evening there is some hiccup; the belly is not painful or swelled, respiration easy. She is a little agitated, no doubt in consequence of some noises around her; ordered syrup of diascodon. At night good sleep and no pain. M. Dupuytren thinks that adhesion has by this time taken place.

On the third day there is neither pain nor swelling of the abdomen. The blades of the forceps are now brought into contact by means of the screw. It would have been imprudent to have done this in the first instance, from the fear that the instrument might have caused the division of the septum before the adhesions were sufficiently firm. The greatest possible degree of constriction now causes no pain. Some broth which she took has passed outwards. The fæcal matter flows freely. She is kept as clean as possible. The portion of membrane near that comprehended in the grasp of the forceps, and seen from without to be red and inflamed, proves the inflammatory state of that which is situated within; the inflammation being quite local, and not extending to the other parts of the abdomen.

Morning of the fourth day:—She has slept well without having taken any opiate. She has taken some coffee, which has caused some colic and abundant purging. In the evening a spoonful of syrup of diascodon was ordered. She sleeps the whole night.

Fifth day:—She suffers no inconvenience; she is quite well, and even better than before the operation. The forceps seem to her less troublesome than the eversion of the intestine. It can be seen already that the most external parts of the septum are divided: the edges of this wound are covered by a whitish albuminous layer; a false membrane covers the sort of caruncles that the angles of this division present.

Sixth day:—Slight colics towards the right iliac region; these are regarded as the precursors of success: they are produced by the contact of the fæces with the mucous membrane of the inferior extremity. This is a common effect of the re-establishment

of the course of any liquid in its natural passage; thus the urine produces a painful sensation in the urethra after the operation of lithotomy. A cataplasm is applied to the painful part. The edges of the section made by the forceps rise towards the surface of the intestine.

Seventh day:—Her general state is good, her appearance calm. The pain has moved upwards towards the epigastric region. It follows the course of the large intestine. It is easily explained. For eighteen months this woman has passed no fæces by the natural anus. The patients cured by Desault presented the same phenomena. She is tormented by slight pains about the fundament, and a wish to go to stool. There is, however, neither fever, nor shivering, nor such pain as to indicate inflammation. The shreds of the membrane which hold the forceps are so weak, that these may be rotated on their axis, and that their weight alone has made them descend an inch and a half.

At half-past twelve the patient found that the forceps had fallen between her thighs. The pain in the large intestine is less. An injection has caused the passage of some mucus, but of no fæcal matter. On examining the forceps there was found between their edges a membranous band, three inches long and two lines wide. The membrane of each intestine can be separated from the other.

Eighth day:—The patient is dissatisfied because the fæces do not yet pass by the natural anus; above all she is tormented by the false information given to her by some ill-advised or ill-intentioned persons, viz. that she will not be cured without a second application. She has, however, only some slight colics in the course of the large intestines. The fæces still flow by the artificial anus. The projection of the inferior part still exists in a slight degree. At the point of the section is seen a greyish surface, the result of the adhesion of the mucous membrane. One shudders to think what might be the consequence of the rupture of such an adhesion, by premature pressure: it is for this reason that no bandage has been employed to make the fæces resume their natural course. This forms the second period of the operation, that when the consolidation of the recent adhesions is expected.

Second day from the separation of the forceps:—The inflamed skin is anointed with cerate. Compresses smeared in like manner are placed on the opening, and supported by a spica bandage loosely applied, with directions for its removal if the retention of the fæces cause the slightest pain. The object of this is to hinder the passage of the fæces and the eversion at this point. Injections are given with the intention of keeping open the in-

ferior extremity, of preparing it to receive the fæces, and to pre-
vent the irritation often produced by the anti-peristaltic motion
of the intestines. The patient is troubled the whole day by wind,
of which she passes a large quantity.

Third day :—Two injections given in the morning cause some
black stools of a horrible fætor. Doubtless they were the cause
of the first colics, and have lodged in the intestines ever since.
On removing the dressings it was found that a very small quan-
tity of fæces had passed by the artificial anus, and none by the
natural one but these black matters. Similar apparatus is ap-
plied but more closely, with the same orders to relax it if it cause
pain at the point of adhesion.

Fourth day :—The adhesion is sufficiently strong to allow that
the fæces should be made to pass wholly by the artificial anus.
Here begins the third period of the operation.

The projection of the inferior end of the intestine being pushed
back, the neighbourhood of the wound is smeared with cerate.
Over it are then applied a compress smeared with cerate, pads of
charpie formed into a pyramid, a triangular compress, and lastly,
to fix the whole, the pad of a truss.

The patient in the course of the day suffers some colic, which
terminates in copious stools, with great relief.

Fifth day :—Evacuation of fluid bilious matter by the anus.

Seventh day :—The escape of fæces by the artificial opening
is wholly prevented by bringing the edges of the wound together
with compresses.

Eighth day :—The patient is well and has copious stools. The
apparatus is removed, and the truss taken away for the time, as
its pad is found to act unequally on the bend of the groin. The
patient experiences some palpitations, weakness approaching to
syncope, and cold sweats : on the following day she is much
better, her pulse only is small and irregular, but there is no other
symptom of disease in the great visceral cavities. A new oblong
pad is substituted for the original circular one : the dressing is
continued thus for several days. It is attempted to fulfil the
fourth indication, that of closing the opening by rolls of charpie
applied upon its edges.

A month after the operation the opening was reduced in size
one half. M. Dupuytren, thinking that the length of time it took
to close wholly might depend on the pressure employed, left a
free opening for two days. The inferior end of the intestine then
protruded to the extent of half an inch, the opening enlarged,
and the parts in the vicinity became irritated : the truss was re-
sumed. For fourteen days injections were given to solicit eva-
cuations; the apparatus was removed but once in two days, and

each time there was only found a slight yellow stain on the charpie which closed the fistula. The fæces only passed among the dressings when the patient moved much about. At length, six weeks after the removal of the forceps, the patient was allowed to rise; but in this position the skin is too tense to allow the application of the compressive apparatus.

The woman wished to return to her occupation of a market-woman at the Halle, and left the Hôtel-Dieu, where she had been three months and a half. The wound was then reduced to a third of its original extent, no eversion takes place, and all the fæces pass by the natural anus. She digests vegetables, goes to stool once in twenty-four hours, has no other inconvenience from the artificial anus than that resulting from the application of the retentive bandage: the wound still tends to close, and the patient can eat food of every kind.

After the return of this woman to her home the fistula became completely obliterated, and the cure was thus rendered perfect.

NINTH OBSERVATION.

Ménage Louis Françoise, aged twenty-six, a labourer, born at Chaux, Canton de Claye, Arrondissement de Chateaudun, had, from infancy, an inguinal hernia on the right side. According to the account of his parents it arose at the age of six months, from the efforts he made in crying during a fit of illness. A medical man reduced it, and applied a pad and bandage, but the use of this was given up, and no other method resorted to for retaining it. He entered like other children into all the amusements of his time of life, riding, leaping, climbing, without suffering any inconvenience. There was always, however, a little tumour the size of a nut, which scarcely passed the orifice of the inguinal canal, and which the slightest pressure reduced. As his strength increased he took more violent exercise, and though his work was most laborious, the hernia did not increase proportionally. In moist and foggy weather, when his fibres were relaxed, the tumour increased in size, and descended into the scrotum, though to a small extent. He experienced borborygmi and passed much wind. As soon as he lay down the tumour returned; he rubbed his belly near the fire, took a little oil and brandy or vinegar, and got rid of his colic; but when he stood up the tumour reappeared, which, however, did not hinder him from following his work.

Whatever excess he committed the hernia had never been strangulated, when, on the 2d of January, 1815, about eight in the morning, which was cold and dry, having eaten as usual, he got up with his companions on a stack of corn, to place it in the

barn ; scarcely, however, had he set to work, when he felt some flushing of the face; he had made no efforts, and had no colic, but he was overwhelmed by a general uneasiness, and descended to rest for a time : soon feeling better, he reascended the stack, but scarcely had he got to the top of the ladder when he felt some colic and an urgent desire to go to stool : he made vain attempts to satisfy this illusory necessity ; his colic increased, and he seemed to be torn in two in the middle of his body. He lay down, endeavoured to return the hernia, raised his feet, lowered his head, in short employed all the means to which he was accustomed, but in vain. He says, however, that it was not larger, but only harder than on other days. About ten o'clock he had some hiccup and nausea ; at noon, vomiting, which became more frequent and very violent. The hernia, which till then had scarcely passed the ring, augmented considerably in size, descended into the scrotum, and in the space of an hour became as large as two fists. All the symptoms increased, the colic particularly was so violent, that in spite of his condition he could not remain in bed.

On the following morning M. A——, a surgeon at Chateaudun, saw him, and not expecting to reduce the hernia by the taxis alone, performed venesection, in the hope of producing syncope, and consequently let the blood flow until it stopped of itself, but the patient did not faint, and the surgeon went away without having been able to return the hernia. He ordered the application of ice and snow to the tumour and to the belly ; about eight pounds were thus employed. The application produced an increase of pain and colic. In the evening he was kept three quarters of an hour in a very warm bath.

The next or third day Mr. A—— returned, performed another venesection, but without syncope : the patient wished to be bled from both arms, but the surgeon was less bold, and refused. For a quarter of an hour he made the most violent attempts to reduce the hernia by taxis and other means : the patient suffered severe pain, which, to use his expression, choked, stifled him. He expected every moment to be his last, but nothing went up, and he continually got worse. He had a scanty stool of the fæces in the lower intestines. The joy this caused him did not last long : the symptoms returned with renewed force.

The patient, who had before requested to be taken to the Hospital of Chateaudun, to be operated upon, if necessary, now renewed his instances, but (who would believe it) was dissuaded from it by his surgeon, under the pretext that in hospitals, great and small, operations were too soon performed, and that of a hundred scarce one escaped. In short, from this fine reasoning

he was not taken there until the fifth day. The weather was very cold, the ground frozen, and he was carried on a common cart. From this a judgment may be formed of the shocks he suffered on the worst roads for an hour and a half, and of the state in which he arrived at the Hospital. About eleven in the morning he was seen by the two surgeons of the house, who, after examining all things, thought it their duty to use palliative measures, without any operation.

Sixth day of strangulation :—The same visit, the same determination to defer an operation : some local applications were made, but nothing given internally, no baths employed. In the evening he complained that nothing was attempted to save him, and asked if no operation could be done. His state was such, that nothing which gave a hope of change alarmed him. After a long consultation the operation was decided on. He could give no account of what passed during this, except that it was long and painful. After the operation the wound was plugged up ; he experienced no remarkable relief, and nothing passed during the night. On the following morning the tampoon was taken out of the wound, and then much fæcal matter flowed out, with a large worm still living ; the evening before he had vomited up two similar ones. During the day the evacuations were very abundant. From longitudinal the wound became circular, gangrene having taken place. When this ceased the wound improved, became florid, and gradually diminished in size. The patient, tormented by continual hunger, often ate in secret, for he had been put on low diet, to which he could not confine himself in spite of his good resolutions. He had been told that he would get well quickly if he ate little, and that this was the only method to force the fæces to resume their course.

But nature was stronger than all arguments : he gave way to his appetite, eating with avidity all he could find. He was only satisfied for some moments, as the food passed through the wound an hour or two at most after it had been swallowed. Of this he could readily convince himself, as he recognized the food he had just eaten, so little was it changed by digestion. But all kinds were not similarly affected. Vegetables of every kind remained the shortest time, and were least changed. French beans, cabbage, potatoes, &c. passed in half an hour, or at most an hour, almost untouched. Meat did not pass till the end of two hours, and was scarcely recognizable. Bread remained still longer, and was entirely decomposed. He had also perceived, that hunger returned sooner, in proportion as the food he had taken was passed more quickly, and was less changed : for example, that vegetables supported him a shorter time than meat

and bread; and that of meats, boiled did not satisfy him so long as roast. Hence he was led to prefer cutlets and other roasted meats. All this, however, did not prevent his getting rapidly thin; his strength diminished, and he lost his energy and vivacity.

Seven weeks after the operation he suffered from colics and griping, with a desire to go to stool. Several injections were given in the course of the day, and he passed a large and long cylinder of whitish matter mixed with blood. It should seem that in the attempts at defæcation the mucous membrane was torn. Two days afterwards he had a stool nearly similar, and passed a quantity of wind. Some time after this he had fresh and more severe colics, followed by evacuations of real fæces, more coloured, fœtid, and less consistent. He at first went to stool once in two or three days; afterwards every day, and sometimes even twice, as though he had a purging.

About three-fourths of the fæces passed by the wound, and the quantity which passed by the rectum remained the same, whether he ate much or little. In six months the fæces passed in equal quantity by the wound and the rectum. The edges of the wound were then approximated by adhesive plaisters, and exact compression employed to prevent the passage of any thing through it; but the patient experienced colic, nausea, and vomiting, and the fæces escaped by forcing all obstacles. This plan was given up, and another adopted, which succeeded better: this was a common truss, the pad of which was well guarded, and which the patient removed when he felt the necessity of evacuating the fæces. At last it was wished to practise an operation, for the purpose of uniting the two ends of the intestine. This the patient refused, and left the Hospital of Chauteaudun. A short time after this he came to Paris, and entered the Hôtel Dieu, September 11th, 1815.

The constitution of the patient was weakened, although he was not very thin. His muscles were soft and flaccid. The opening of the artificial anus might be about half an inch in diameter, but it was in a great part closed by a fold of mucous membrane as large as a bean, adhering to the upper and outer part of this opening. The skin about it was puckered and wrinkled; from the passage of the fæces over the skin of the groin, and upper part of the thigh, it had become erysipelatous, with many large painful pimples. The mucous membrane was exposed at several points, while in others there was only the skin, hard and callous.

If the fæces by their contact could cause inflammation of the skin, the anguish of the patient may be guessed, when they

touched the nervous papillæ of the skin deprived of its cuticle, particularly when its sensibility was increased by inflammation. The patient could not move to any extent, without being soiled by excrement ; he lived in an offensive and infectious atmosphere, injurious to himself, and disgusting to those about him. He was thus in the prime of life, separated from society, and unable to gain a livelihood. Every time that he made any considerable effort, or coughed, a portion of intestine, sometimes very considerable, descended into the scrotum, passing behind and a little within the portion adherent to the skin ; the mucous membrane which lined the artificial anus was then driven forwards, and made a considerable projection. He returned the displaced parts as he would have done an ordinary rupture. No truss could prevent the formation of this new hernia, the intestine slipping under it whatever pressure was made. A true eversion of the intestine took place several times in the wound, the mucous membrane passing out to a greater or less extent ; he returned it as if it were a prolapsus ani. Thus tormented by these inconveniences, the patient constantly repeated, that if he had known at the time of the operation at what a price existence was to be purchased, he would never have wished to live.

He was allowed to rest for some days. Emollient cataplasms were applied to quiet irritation. When this object was effected, M. Dupuytren tried to find the two extremities of the intestine by introducing female catheters in different directions. This method leaving him still in a state of doubt, about three months after the admission of the patient, he decided upon enlarging the opening towards the scrotum, by cutting through a sort of cul de sac, which descended an inch and a half below the level of the wound. This incision allowed him on the following day to introduce the index finger into the upper extremity, with the intention of finding the two extremities, and the septum which divided them, but his repeated researches were unsuccessful. The patient having been a little fatigued, he was allowed to repose for three days ; on the fourth, the irritation being quieted, new reseaches were made, but still without success. On [the following day a considerable inflammation had taken place in the surrounding parts, the scrotum was much swelled, and for two days the patient experienced some nausea and vomiting, without hiccup. M. Dupuytren feared an effusion of fæces in the abdomen, but the alarming symptoms were removed by the antiphlogistic treatment. The inflammation still continued externally, and at the end of six days an abscess formed at the root of the penis. It opened between the symphisis pubis and the artificial anus, and gave issue to a large quantity of pus, which

flowed abundantly for three weeks. During the six weeks which followed this opening, the fæces ceased to pass through the lower extremity.

Some time afterwards it was tried for a fortnight, whether tampooning would suffice to hinder the passage of the fæces through the wound, and force them to resume their course. But the attempt was given up, as much because of the symptoms it produced, colic, nausea, &c., as because it did not effect the object proposed. About two months afterwards M. Dupuytren made a new search for the two extremities, but without any satisfactory result. M. Dupuytren being now occupied with the treatment of a woman admitted into the Hôtel Dieu, Salle Saint Jean, and desiring to apply to the one patient whatever might prove useful to the other, nothing was attempted until the end of August, when the forceps were detached from the woman having produced the desired effect.

When a female catheter was introduced through the artificial anus, and directed from above downwards, it descended about an inch and a half. At this depth it entered a cul de sac placed near the testicle. If from this point it was directed upwards and inwards, it buried itself opposite to the symphisis pubis. By raising the point still more, it entered a larger space, passed the inguinal ring, and went into the abdomen. If it was then pushed towards the umbilicus it penetrated to a great depth. Although in a large cavity, as was proved by the facility with which it moved in every direction, it entered with difficulty, making starts as though it was momentarily stopped by some obstacle, which was avoided by changing the direction. Another catheter, directed from below upwards, and from within outwards towards the crista of the ilium, entered another canal, provided care was taken in introducing it to keep the point close to the posterior surface of the abdominal muscles. If the attempt was made to move it to any extent, it met with some resistance, and caused some pain. It was therefore confined in a smaller space, but entered with the greatest facility, and without any starting. It could not be directed towards the umbilicus. The two catheters crossed one another in the wound, forming an X. When thus crossed, they could make about a turn and a half, one on the other, without causing the slightest pain to the patient, but if the attempt was carried farther, he immediately stopped the operator's hand.

On endeavouring to rub the one catheter against the other, the grating of the two metallic surfaces was distinctly felt for an inch, or an inch and a half from the orifice ; but at a greater depth, the round point of each was found to rub on the other,

through a soft and very thin body. The catheter directed towards the umbilicus constantly gave issue to a thin yellowish fluid; the other was always dry, nothing passing from it. This fluid was so like urine, that the patient never gave it any other name. It only passed in the morning if the patient fasted; but an hour after having taken solid food, as bread or meat, nothing passed but a chymous paste, more or less thick. The case was different when he had taken only broth or liquid food; these did not change the appearance or quality of the fluid in question. These researches, several times repeated, rendered it probable that the catheter turned towards the umbilicus, was in the superior, and the other in the inferior extremity of the intestine. But even if this was certain, it would still be necessary to enlarge the wound, for the purpose of exploring the parts, and applying the forceps with safety.

August 26 :—M. Dupuytren enlarged the opening from above downwards, cutting the cul de sac, of which I have spoken, as well as the scrotum, to the extent of an inch and a half, but still without meeting the two ends of the intestine. As the wound had become very sensible he made no farther search for two days. On the third day, having introduced his little finger, he found the wished for septum and the orifice of the inferior extremity, nine or ten lines from the external opening. The following was the disposition of the parts :—The finger directed from above downwards reached the bottom of the cul de sac, and ascending inwards towards the symphisis pubis, the mucous membrane presented a continuous surface. Posteriorly, some lines below the opening of the anus, could be felt the projection of the crural arch. Proceeding towards the umbilicus, but a little from before backwards, was found a hollow space, in which the finger moved freely. Here was found the orifice of the superior extremity which was easily recognizable, as it was large and contained fæcal matter; but particularly from the direction of the valves of the mucous membrane, against which the finger struck. By turning the point of the finger towards the crista ilii, and drawing it gently backwards, it entered the lower end of the intestine, at the same time raising a flap which covered its orifice, being closely applied to the mucous membrane, where the intestine itself adhered to its abdominal muscles. This flap was soft, thin, and very mobile; it had an oblique direction, corresponding to a line drawn from the umbilicus to the anterior superior spine of the ilium. When the finger had passed this point it easily entered the lower extremity, which was known by its small size, by the absence of fæcal matter, and of the sensation produced in the other by the mucous valves; its surface also

appeared softer, and more velvet like, from being covered with thick white mucus, which adhered to the finger when withdrawn. From these circumstances it results that the upper extremity was placed at the inner and lower; the inferior extremity at the upper and outer part of the wound.

It appears also, that loss of substance had taken place in one point only of the intestinal loop, that is, in the inferior portion, at the point of strangulation.

August 30th:—The forceps were applied; the two branches, separately introduced, were moderately tightened, so as not to slip. This caused the patient a slight pain, which only lasted a quarter of an hour, after which he was perfectly calm and slept soundly.

On the following day his state was the same. In the course of the day, surprised that the patient felt no pain, and fearing that the forceps might drop off, they were screwed tighter; but as this caused no pain the screw was turned until the blades came in contact: he had then some colic, but neither nausea, hiccup, nor vomiting. At the evening visit the colic had ceased. During the first seven days nothing remarkable happened.

On the eighth he had some colic and a stool: the forceps became moveable. At the evening visit they came away, eight days and eleven hours after their application.

On separating the blades there was found in the groove of the female branch a black, half-dried, membrane-like substance, thin, consistent, and twenty lines long; it covered to the same extent the part of the male blade which entered into the groove of the female one. The blunt, undulated edge had preserved its polish from the extremity to the point where the membrane terminated, that is for the space of twenty lines, and to the width of half a line, that is to the extent to which the male enters into the female branch. The membrane went no farther than the edges of the groove, and followed all its undulations. Being folded back to the extent of half a line on each edge of the groove, it necessarily followed that the loss of substance was larger than the instrument itself.

Two injections were ordered: for two days the patient had no stool by the natural anus, and no colic. M. Dupuytren thought for a moment that the septum had not been divided; but on the third day, having introduced his little finger into the wound, he felt, at the depth of about two inches, the firm undulated edges of the division made by the forceps. Some lines beyond the extremity of these two edges could be felt the remainder of the septum, two lines thick. Each of the undulated edges terminated by a tubercle as large as a pea, formed by the angle resulting

from the section of the septum, perpendicular to its loose edge. As a passage then was free, why did not the fæces pass on to the rectum ? The reason was, that the artificial opening was in the direction of the upper end, whilst the inferior being placed above, the fæces must ascend to enter it. The swelling of the surrounding parts also presented an obstacle.

The edges of the opening were approximated by pads of lint applied laterally, and supported by a bandage. During the day the patient passed some solid fæces, but on the following day the dressings were soiled by a large quantity of green fluid matter. The wound was compressed and injections given daily : the stools varied on different days, sometimes frequent and copious, sometimes scanty. The patient's health suffered no change. The extent of the wound diminished daily ; the fold of mucous membrane sunk below the level of the skin, and formed a little funnel, which became rapidly deeper and smaller. Its retraction was assisted by pressure made from above downwards.

Twenty days after the removal of the forceps, the mucous membrane was touched with nitrate of silver ; this application produced an undulatory and vermicular motion in the mucous membrane : the peristaltic motion of the intestine was increased, and the membrane farther retracted. On the following day the application was repeated ; it caused some pain : the fæces issued in larger quantity by the artificial anus: the application of the caustic was given up : the edges of the wound contracted ; the fæces which escaped were liquid, and only stained the charpie. A truss was applied with a smooth pad : the spring was strong, and made an exact compression. At each dressing the charpie was scarcely stained by mucus. The wound was not larger than a lentil ; the stools, which occur but once in three or four days, become more solid.

From the rapidity with which the wound had closed so far a speedy cure was reckoned on ; but what appeared so easy, on the contrary presented the greatest difficulties. For two months pressure was made without success on the little fistulous opening : in vain were its edges brought together by strips of adhesive plaister ; in vain were attempts made to inflame the mucous membrane by the use of nitrate of silver. After three or four days its application was necessarily discontinued from excessive pain. It was resumed after a few days, and a certain degree of inflammation produced ; but as soon as fæcal, mucous, or purulent matter got between the edges, their contact was no longer perfect, and no union could take place.

Such was the state of things when M. Dupuytren decided on removing the edges of the opening with a cutting instrument;

Lest he should cut too deep, he held the mucous membrane and the lower edge of the opening with a pair of dissecting forceps, passed the knife horizontally into the thickness of the skin and the mucous membrane, its edge being turned downwards; he then completed the first section by cutting horizontally. He removed the surface of the upper edge of the opening in like manner, and then, by means of a pair of curved scissars, took away those portions of mucous membrane and skin which the knife could not reach: hence resulted a superficial wound an inch, or an inch and half long, and half an inch wide, the greatest diameter of which was from above downwards. He united the edges of the wound by means of three needles, placed about four lines from each other, and supported by the turns of a waxed thread, as in the hare-lip operation: the whole was lightly sprinkled with colophany, and covered by a pad of charpie sprinkled in like manner. Waxed threads crossing each other over this passed over the needle so as to steady the whole, and lessen the pressure; charpie also, covered with colophany, was placed under the points of the needle to support the skin; the whole was covered with soft charpie impregnated with the same substance, and supported by a spica bandage, moderately tight: the colophany was employed to absorb fluids, and render the whole solid. The patient suffered no pain after this dressing.

For three days every thing went on as usual: but on the fourth he felt pass through the wound, at first gas, then some fluids, and during the night large quantities of fæcal matter. On the fifth day the apparatus was removed; the needles had cut through the edges of the wound, which was red, swelled, and painful; for three days it was covered with soft charpie, supported by some turns of a bandage; it was then attempted to unite it by strips of adhesive plaister and bandage: in three days the lower parts of the wound were almost united. The same dressing continued, and a truss applied. At last, a fortnight after the detachment of the needles, there only remained a little opening situated at the upper part of the wound, and similar to that which existed when the needles were applied, and which seemed little disposed to close. To keep the edges in close contact M. Dupuytren invented a little machine, composed of two metallic plates, three inches long, provided on their corresponding surfaces with hair pads, destined to act on the edges of the wound. Each plate is surmounted by three flat projecting portions, one in the middle and one at each end. The projections at each extremity, which I will call A, support a cylinder destined to enter a hole in the corresponding projection of the opposite plate, which projection I call B. At the end of the central projection was a screw, ri-

veted at one extremity F, and provided at the other E, with a little plate for turning it; the screw riveted upon the projecting part of the plate was previously passed through a hole adapted to its spiral turn, and situated in the corresponding projection of the opposite plate: thus, by the action of this screw, the two plates might be approximated to, or separated from, each other.

All being thus arranged, the skin was raised with the fingers, so as to place the two edges of the wound between the pads; the skin was then fixed there, by the action of the screw approximating the pads. But as the shape of these allowed the skin to slip and escape, the instrument was fixed by some turns of a bandage crossing about it. Nothing passed by the opening while the instrument was applied; but as soon as it was removed or deranged, serosity or fæcal matter issued through it. At the end of ten or twelve days, to render the pressure more exact, two little compresses of linen were applied on each side of the opening, and the pads closed. This pressure caused a considerable tumefaction and inflammation above and below the compresses; and from the fear that this should cause an abscess, the instrument was removed. But in order to profit from the state of swelling and inflammation which existed, the contraction was favoured by strips of adhesive plaister supported by a spica bandage.

On the following day, the patient applied his truss; nothing flowed when the instrument was removed, and from this time nothing passed through the fistula. Eight days afterwards the apparatus was removed; a little mucus had slightly stained the charpie. The application was continued, and in ten days, when the use of the instrument was given up, all had united. The cure was complete four months after the application of the forceps on August 30th.

The cicatrix exposed to the impression of cold, sinks and becomes funnel shaped, returning to its level when the action of cold has ceased. Independent of this effect, there is constantly present an undulatory motion, arising from the peristaltic motion of the intestine, and communicated to the cicatrix by the adhesions. One day, when his truss was removed, at a time when he was sitting on a chair, an irregular tumour formed all about the cicatrix; there was only time to reduce it by the application of the hand, and then a gurgling was felt, produced by the mixture of gas and fæcal matter.

<div align="center">TENTH OBSERVATION.</div>

Cardan (Charles François Marcel), aged twenty-nine, a weaver, at the time of his admission into the Hôtel-Dieu, Sept. 11, 1816

of a robust constitution and sanguine temperament, still pre-
served his gaiety, in spite of his unhappy state. At the age of
fifteen he first perceived that he had a tumour (an inguinal
hernia) in his right groin. He remained for three years without
wearing a truss, or suffering any great inconvenience. It had
arisen without any known cause, and gradually increased. It
was not larger than an egg, placed on the right side of the penis
near its root, lower than which it did not descend. Cardan
frequently experienced, from carrying heavy weights, which he
did daily, colic, and vomiting for twelve or fifteen hours: once
he had had severe symptoms for a whole day. The tumour had
descended into the scrotum, and acquired a considerable size.
He applied cataplasms which softened it, and caused its return.
A conscript in 1805, he entered into a regiment, and then
first began to wear a truss, and suffered no inconvenience. His
first truss, which he had used for six years, being worn out, he
applied for another; but the surgeon of his corps considered
that he was cured, and no longer required one. For nine months
therefore he wore none, took no precautions, and had not the
slightest unpleasant symptom.

January 1st, 1811:—During very cold weather he returned
from the village of La Villette to his quarters, without having
either eaten or drank more than usual. In going up stairs he
suffered some colic, and thought his hernia had come down.
He took some soup without exciting nausea: a little afterwards
he had hiccup and vomiting. The hernia augmented consider-
ably in size, becoming larger than a fist. During the night he
had colic, nausea, and constant vomiting: at midnight he had a
large stool.

On the following day, January 2d, he entered the Hospital of
the Val-de-Grace. Nothing absolutely was done for him on that
evening or during the night.

On the third day the surgeon of this establishment ordered a
bath, and a cataplasm to the hernia.

On the morning of the fourth day some attempts at reduction
were made, which proved equally unsuccessful with those of the
preceding evening. The operation was then proposed which
the patient had desired from the first. He said that he suffered
much, but being very weak he was unable to cry out. It has
since been ascertained, that the surgeon finding sanguinolent
serosity in the sac, and the intestine of a violet colour, he
dragged the latter outwards, examined it; and finding a pretty
extensive gangrene at the points which had supported the con-
striction, he determined on cutting away the intestinal loop,
(which he did to the extent of five or six inches,) and on con-

fining the two extremities of the intestine in the wound by a thread passed through the mesentery. Scarcely had the dilation been completed when an extraordinary degree of relief resulted: the flow of fæcal matter was very copious. The dressings were simple, the night good.

On the following day the patient was very well, although the local inflammation was considerable. Two portions of intestine, probably invaginated, passed through the opening: they gradually returned. The patient had a voracious appetite; he was scarcely satisfied for a moment: at the end of two hours he again experienced the necessity of eating. He was fed on boiled meat, vermicelli, and rice-milk. He was menaced by the greatest representations of danger if he lived more freely, whilst at the same time a radical cure, that is to say, the natural course of the fæcal matter, was promised him as the result of this severe diet. Three months elapsed before he was undeceived on this point, and he then ate every thing. The following is what he observed on the different degrees of alteration in different alimentary matters, and on the different periods for which they are retained. His recital is perfectly conformable to that of other patients observed and treated in the Hôtel-Dieu for the same infirmity.

Spinach passed unchanged and almost without smell; French beans passed in the form of hard balls; the same was the case with raw fruit, as apples, pears, &c.; fruit which had been dressed remained longer, and was more changed; garden-roots, as carrots, turnips, were affected like the dressed fruit when they were well chewed; broth remained longer (two hours); bread longer still (three or four hours), and meat, particularly roasted, remained five or six hours after being eaten. After taking food of these last kinds he did not so soon feel the want of eating; his excrements were more fœtid. He contrived a sort of bag for receiving the fæcal matters; but this was at first so imperfect, that they escaped during the night in spite of every precaution. He could not sleep for being obliged to take off his bandage, the fæces flowed down his thigh. He knew pretty accurately when he was to have a stool; he then removed his bandage, and remained several hours before he was in a state to walk or work. Sometimes the undigested matters could not pass through the circular plate which was applied to the skin, and which supported the bag destined to receive the fæcal matters; these then diffused themselves in every direction between the skin and the bandage.

At other times, on the slightest effort, the intestine descended into the scrotum, passing behind the adhesion of the artificial

anus, and forming in fact a new hernia; severe symptoms then ensued, and this was the greatest of all his sufferings: sometimes too, in spite of every measure he could employ, as bandages, tampoons, and powerful pressure, it descended as often as ten times in a quarter of an hour; frequently he had difficulty in reducing it. He had large excoriations on the loins and hips, whilst at the same time he was forced to walk and to work. Besides this, invagination frequently occurred through the superior extremity, which the bandage could not prevent, as the middle of its pad was unoccupied. In this way portions of intestine, six or seven inches long, giving passage to the fæcal matters, protruded through the opening in the bandage. This sometimes happened two or three times a day, and he was often several hours before he could return the parts; he then experienced gripings and great pain in the bowels. It sometimes happened that many months elapsed without any such symptoms. He remained three years in the Val-de-Grace as sick and infirm: he then worked at his trade as a weaver.

He entered the Hôtel-Dieu in the beginning of September, 1816, resolved to submit to any thing which might relieve his wretched state. The two openings of the intestine and the septum dividing them could be seen from without, no research being required for this purpose. The forceps of M. Dupuytren were applied September 13th. They were about an inch and a half longer than those employed for the other patients. The blades were introduced in their whole length, and screwed sufficiently tight to prevent their slipping.

On the first day there was some hiccup and colic, but little or no pain in the wound. He has no appetite, and is kept on low diet. Twice in the day the screw is tightened a little; each time the patient suffers some pain for about two hours.

On the second day the circumstances are the same; the patient tightened the screw himself several times.

On the third day the patient experienced no pain, when the instrument was farther tightened. In the evening the handles of the blades were brought into contact exteriorly: they remained so for four days without any change, and came away on the seventh. They had been moveable for some time, but they were not withdrawn, as the patient felt pain when this was attempted. On examining the instrument, it caused much surprise to find a space of several lines between the extremities of the two blades which had been introduced. They had not been properly tempered before they were finished, and as the blades were very long, their extremities had bent outwards, the deviation beginning in an insensible manner at the point of junction. Thus a

part of the septum (the most external) had been sufficiently compressed to cause its destruction to the extent of an inch and some lines ; whilst it remained perfect from the point where the separation of the blades had been so considerable as to prevent their causing an adequate constriction. When the blades were separated a piece of membrane was found in the groove of the female one, black, dry, adherent, thick towards the junction of the blades, extremely thin and ragged towards their extremities, which explains why the extent of the membrane remaining after the instrument was more than correspondent to that of the membrane destroyed. The finger being again introduced, it was observed that the edge of the septum was thin and oblique, so that here its thickness had been but partially destroyed.

The instrument having been arranged and tempered was replaced in the evening. In a little time afterwards the patient suffered considerable pain, and violent colic. He bore all with courage, and although he had been told that if he suffered much he might relax the screw a little, he would not do so from the wish he had to obtain a cure. His countenance was dull and leaden, his pulse hard and rather frequent, his skin hot, his belly painful, and particularly on the least pressure. The local pain, however, scarcely lasted two hours when the screw had been a little relaxed. The patient himself, in the course of the day and night, tightened and loosened the screw according to the degree of pain which he felt. He had lost his appetite.

On the two following days he felt something passing upwards and downwards in his belly. He felt some colic.

On the third day, after much griping, he had a stool, at first whitish and rather hard, then liquid, coloured, and fœtid. He felt also some fæces pass by the natural anus, and had a sort of purging which continued even after the separation of the forceps. These came away on the sixth day, bringing with them about two inches of the septum. The whole extent to which the septum was destroyed might be about three inches and some lines. From this time simple pressure from without sufficed to prevent the passage of the fæces through the artificial anus.

Until January, 1817, no attempt was made to close the fistula : its edges were simply approximated by adhesive plaisters, a pad of charpie, a compress several folds thick, and to support the whole, a truss with a large and slightly concave pad. The opening diminished a little towards the bottom.

Jan. 1, 1817 :—The fæces passed in very small quantities by the artificial anus. To obtain a perfect cure it was necessary to procure the cicatrization of the wound. M. Dupuytren had, in fact, by means of his forceps, restored the natural course of the fæcal

matters. We might naturally think this the most delicate part, and suppose that the external opening would close spontaneously, when the cause which kept it up had been almost entirely removed, and when besides, the flow of any matter might be prevented by the pressure of a bandage. But that which seemed easiest presented in fact most difficulty. M. Dupuytren applied at first a spica bandage, and above it a truss. But as the wound made no progress towards a cure, it was necessary to have recourse to the instrument which had been employed in the case of Menage. This had no better result. For a long time too the wound was powdered with colophany and lycopodium, with the intention of absorbing the mucosities as they were deposited.

After having long reflected on the means of obtaining the cicatrization of the wound, M. Dupuytren thought that it might be effected in two ways : first, by changing the organization of the mucous membrane, so as to put it in a state fit for union : second, by keeping the parts thus favourably disposed in contact. The nitrate of silver was accordingly applied for several days, but although eschars formed, the surface alone was destroyed, the membrane speedily resumed its ordinary appearance. What occurred on the mucous membrane may be compared to what takes place after the application of a slight vesicatory. The epidermis was reproduced with extreme facility. The use of the nitrate of silver being unsuccessful, M. Dupuytren thought that the actual cautery producing a greater effect might change the nature of the mucous membrane, so as to reduce it to the state of a common wound. Three small irons, made for the purpose, were brought to a white heat : the mucous membrane and skin were pretty deeply acted on. Four applications were made, and the usual instrument applied to support the edges of the wound. The eschars having separated granulations succeeded ; but these soon disappeared, and the membrane resumed its original state.

February 26th :—M. Dupuytren resolved to employ the quilled suture. The wound being raised by its extremities, double threads were passed near these extremities : two cylinders were then placed, one on the superior, the other on the inferior edge of the wound : the compressing instrument was also applied, so that the edges of the wound might be in perfect contact. In the evening the patient was well ; nothing was deranged.

27th :—The patient suffered a little ; the superior cylinder was so deranged that it depressed the upper edge of the wound.

March 5th :—The whole was so displaced that it was necessary to remove it ; the edges of the wound were red, swelled,

and very painful. It was wished not to reapply the machine, but the patient was obliged to do so in the course of the day, as the passage of the fæcal matter and gas was very inconvenient.

Two days afterwards, the pain and tumefaction being almost gone, M. Dupuytren thought, that if the suture had not been followed by the cure of the wound, it had yet assisted this cure, which would be hastened by preventing the passage of the mat- ters. This time the patient kept the instrument for twenty-one days. At this period it separated ; a little matter passed, but the wound was contracted at its extremities. For some days nothing more was done than to approximate the edges with adhesive plaisters.

April 15th :—The tourniquet was reapplied, and the wound sprinkled with powder of lycopodium, over which were placed pads-of charpie.

May 9th :—The instrument had been applied twenty-four days, and till that time had not been touched. On this day it was examined : the charpie covering the wound was found dry, and the fistulous opening appeared contracted. The inferior part of the fold of the skin, included between the pads of the tourniquet, had been little compressed : it was through this in- ferior part that a little fæces and gas passed. A small compress was placed between the pad and the skin, and for five days that it remained in place nothing escaped. The patient suffered no inconvenience, and did not appear fatigued.

May 11th :—The tourniquet was removed; the opening this time was much contracted : at the bottom, in particular, it would scarcely admit the introduction of a quill. The instru- ment was again applied ; the edges of the wound were approxi- mated more than ever, and sprinkled with powder of bark to dry the wound. The patient could only bear the tourniquet for three days.

May 14th :—The wound was dressed in the following manner : an assistant kept the edges of the wound in contact, long pads of charpie were placed in the direction of the fold in the skin, and to support these strips of diachylon plaister, an inguinal truss with a concave pad being placed over the whole.

On the 17th this apparatus was renewed : there was a notable diminution in the external opening; the bottom of the wound was also much diminished. The dressing was renewed every five or six days, sometimes only every ten or fifteen, when it was little displaced, and when the quantity of matters which issued was small.

The fistula diminished a little from May 26th to 31st. At this time the external opening was not more than half an inch ;

it contracted like a funnel towards the bottom, which would scarcely admit a crow quill. From this time until the month of October no remarkable attempt was made to procure the cicatrization of the fistula. Adhesive plaisters and the tourniquet, applied in the manner we have described, were employed at various periods, and changed every five or six days.

In the beginning of November M. Dupuytren wished to try a new instrument which he had invented: it was a tourniquet almost similar to that already described; it differed in this respect,, that instead of two plates opposed by their widest surfaces, and provided with pads, it presented two steel plates, curved on their flat surfaces, (of the same shape as the forceps employed for destroying the band opposed to the natural course of the fæces,) one being male the other female, and consequently acting on the skin at the edges of the opening as the forceps did on the inter-intestinal septum. This instrument was several times applied, but the patient could not support it, and it was necessary to remove it from the rapidity with which it caused pain and swelling of the parts compressed. M. Dupuytren, seeing the great inconveniences which it produced, and the little advantage to be expected from it, gave up its employment, and had recourse to other measures which he put in execution November 4th, 1817.

He thought that by destroying all continuity between the artificial anus and the skin, and then bringing together the bleeding edges of the wound, and putting them in immediate contact, they might be made to unite in front of and over the artificial anus.

A first incision was made so that the instrument divided the union of the skin and mucous membrane. Another elliptical incision was then made around, but very near to the artificial anus. With a pair of forceps and a bistoury M. Dupuytren then removed the portion of skin included between the two elliptical incisions, so as completely to isolate the opening of the artificial anus from the surrounding parts. It was, however, to be feared, that some portion of the fistulous surface might remain, and by restoring the continuity between the skin and mucous membrane, render this new attempt unsuccessful.

This first part of the operation being done, the edges of the wound were immediately brought together, needles were introduced, and a twisted suture made to fix them: above this were placed strips of adhesive plaister, then charpie, a compress several folds thick, and, to fix the whole, a simple spica bandage in the groin.

On the sixth day, the state of the wound was examined: the

tumefaction was considerable; the needles threatened to tear through the skin; they were withdrawn, and the tourniquet applied. The wound healed slowly. After this operation the opening of the fistula became contracted. From this time it was simply dressed with adhesive straps, absorbent powders, charpie, and a bandage over the whole. The opening became more and more contracted, and soon only gave issue to a very small quantity of colourless serosity. By the progress of this obliteration the cure at last became complete.

This case will shew the numerous attempts which it is necessary to make to procure the cicatrization of the fistula, although the difficulties are not so great in all patients affected with this complaint. In general, however, this last part of the cure presents great obstacles to success, particularly if it be compared with the restoration of the course of the fæces by the natural anus, effected by the forceps of M. Dupuytren.

It may be laid down as a general proposition, that if we had any certain means of producing the cicatrization of the external opening, (through which the fæces no longer pass, but merely mucosities,) we might, in a fortnight or three weeks, cure the greater number of cases of artificial anus.

Art. II.   *Case of a Gunshot Wound of the Thigh, with complete Rupture of the Femoral Artery. By M. le Baron Larrey.— From the Revue Médicale, January,* 1821.

In the Memoir on Wounds of Arteries, inserted in the fourth volume of our Campaigns, and also in that on the spontaneous Cessation of Hemorrhages, in the second volume of the same work, we have made the remark, that whatever be the size of the vessel, provided its rupture be complete, and the cause which effects the division be such as forcibly to stretch and lacerate the parts, the hemorrhage speedily ceases and cannot be renewed. These circumstances are frequently combined in lacerated or gunshot wounds, of which many instances have been recorded, and several remarkable ones by ourselves.

These facts should put surgeons on their guard, and make them hesitate before they act with too much precipitation in such instances. If after the first indications have been fulfilled, no hemorrhage occurs, although we are assured that one or several of the principal vessels of a limb are ruptured, we should not attempt, as certain authors advise, to secure them by ligature; for this measure, however perfect, has not the same be-

neficial result for the patient as that which depends on the spontaneous retraction and adhesion of the two ends of the artery. In the latter case a larger number of collateral branches are preserved, fewer parts are injured, and the patient is spared the pain of operations both delicate and painful.

For an explanation of the circumstances attending wounded arteries, we shall refer to the Memoirs already cited. The detail of the following observation will obviate the necessity of our indicating " *a priori*" what is proper to be done in these cases to second the views of nature, and prevent consecutive hemorrhage.

Jean C——, a corporal in one of the regiments of the Royal Guard, aged 45, received, April 14th, 1820, a pistol shot through both thighs. The ball, fired at eighteen paces, entered the middle of the left thigh on its outer side, and traversing this member obliquely inwards and a little upwards, passed out at the upper third of its inner surface. The projectile then passed through the fleshy mass at the back part of the right thigh from its inner to its outer surface.

In its course through the left thigh the ball divided a part of the vasti externus and internus muscles, and brushed over the convexity of the femur, penetrating between the bone and the tendon of the rectus, the elasticity and resistance of which changed its course, directing it upwards in the line of the femoral artery and the belly of the sartorius. The artery was completely torn across, and the whole thickness of the muscle cut through. The passage of the ball through the other thigh presented nothing remarkable.

The infliction of this double wound was succeeded by the fall of the patient, and a frightful hemorrhage produced by a jet of blood as large as a finger, issuing from the inner wound of the left thigh. The by-standers immediately applied handkerchiefs tightly twisted round the thigh. This measure and the syncope of the man stopped the bleeding, and prevented its return for the moment. He was immediately carried to the Hospital of Gros Caillou. On his arrival the surgeon on duty removed the first dressings, applied a more methodical one, placed him in an easy posture, and recommended absolute repose with an antiphlogistic regimen.

On our first visit we found the patient in the following state: the left thigh tumid, blue, and prodigiously swelled; the leg and foot loaded, cold as marble without motion or feeling. The man himself was pale, and his pulse hardly perceptible. After some hours rest, and the employment of proper measures to recruit his strength, we proceeded to dress the wounds.

We first dilated the two wounds of the right thigh: they were

afterwards treated as simple ones, and passed through all their periods without accidents. We then examined with care and all proper precaution the left thigh, which was most affected.*

The limb, as we have said, was much swelled, and the space between the two wounds filled with clots of blood. Having prepared every thing necessary for the ligature of the femoral artery in case of hemorrhage, and made pressure in the course of the vessel below the crural arch, we dilated the two wounds extensively. We then removed many solid coagula which had formed in the space left by the division of the soft parts. After having cleared out the cavity and cleansed the two wounds, we remitted the pressure : no effusion of blood took place. We then continued our researches. The absence of the tube of the artery in its passage through the middle and inside of the thigh, the obscure pulsations felt in the upper part of the course of the ball, and the other symptoms we have pointed out, left no doubt of the rupture of the trunk of this vessel.

Some of our assistants advised the exposure and ligature of the upper extremity of the vessel as the most certain means of preventing hemorrhage ; but guided by the motives detailed in our Memoirs before quoted, and by our experience, we deferred this operation until the indication should become positive. We took, however, all the necessary precautions for preventing a too great effusion of blood in case of hemorrhage during the night. We applied a compressive bandage to the foot and leg extending to the knee, moistened with camphorated spirits. We then approximated the edges of the wounds, and having covered them with pledgets of charpie and linen, spread with styrax ointment, kept them in close contact by a many-tailed bandage, tightly applied over compresses dipped in camphorated vinegar. The leg was wrapped in flannel, and surrounded by bags of very warm sand, renewed from time to time.

An assistant attended the patient during the first twenty-four hours to prevent accidents. The limb continued cold and numb for 18 hours, at the end of that time it became gradually warmer, and in less than three days its temperature equalled that of the opposite extremity; it then progressively increased so as to exceed that of the rest of the body.

For the first five or six days the patient was much incommoded by numbness and a sense of formication in the limb, which was kept in one position. On the eighth day, as no

---

* In general, when called to an individual wounded in several places, as often happens in the army, it is advisable to dress first the simpler wounds, and then those which require more delicate or painful operations, so as at last to leave the patient in a state of perfect repose.

hemorrhage had occurred, and as the dressings were charged with serous and purulent fluids, we removed them with caution. The thigh was already reduced in size one third, and the wounds were but little swelled. By gentle and gradual pressure we expelled a considerable quantity of dark coagula, and introduced instead tents dipped in a digestive, finishing the dressing as at the first time. We renewed the bandage of the leg, the temperature of which was still very high. The patient was weak and suffered much ; he scarcely slept. We added bitters and opiates to his medicines, and ordered strong soup with a little good wine.

A slight attack of fever, which occurred on the eighth and ninth day, announced the commencement of suppuration. This was soon so abundant that two dressings were daily required. This was performed by ourselves for the first fortnight with extreme precaution, as we dreaded the occurrence of hemorrhage on the separation of the sloughs. We continued the compressive bandage to the leg, but removed the heated sand.

On the 17th day the patient was in a state of great weakness, with utter loss of appetite. The employment of an emetic produced the best effects, which were assisted by bark and other stomachics.

The wounds became clean, the suppuration laudable, and the limb regained its natural size. During the first weeks we favoured the obliteration of the ends of the artery and the union of the integuments with the parts below, by slight pressure made in the course of the wound. Acute pains and a sort of numbness continued for a long time in the course of the saphenus nerve, and even to the extremity of the foot: they ultimately ceased by the use of dry cupping and camphorated alkaline liniments. After the thirty-first day we removed the bandage from the leg, the whole cuticle of which separated. Some gangrenous points had formed on the smaller toes, and on the outside of the leg and foot.

No pulsation could be felt in the popliteal, or dorsalis pedis arteries. The temperature of the limb was still very high, and appeared to us to continue so until the recovery of the patient, which occurred in the beginning of September, on the 13th of which month he left the Hospital, four months after his entrance. At this period the left leg was much smaller than the other, and its motions very imperfect. As to the increase of temperature, we think, as we have observed elsewhere,* that this phe-

---

* See our Memoir on Aneurisms, in the Bulletin of the Society of the School of Medicine.

nomenon depends on the afflux of arterial blood into the capillaries of the skin, which nature employs to transmit life and nutrition to the lower part of a limb, the principal artery of which has been tied, whilst another system of arteries is developed to supply those obliterated, and thus establish a new circulation. We have remarked that this excess of heat in limbs on which the operation for aneurism has been performed, continues for a longer or shorter time, according to the age of the subject, and the premature or tardy development of this new circulation.

In presenting the case related by M. Larrey to our readers we feel it necessary to make a few remarks on the line of practice adopted by him, and on the arguments which he has adduced in support of his opinions. To some it may seem superfluous to insist, in the present advanced state of surgical science, on the absolute necessity of securing both ends of a divided artery in every case in which such an operation is practicable. To the majority of English surgeons at least we are aware it must be so; but when in foreign countries we find men, in other respects eminent and able, on this point pursuing inefficient measures, or at best wavering and undecided in the employment of those which can alone give security and success, when we see these things we feel that we should ill discharge our duty were we to fail in expressing our opinion on the subject.

We shall not now enter into a detail of the reasons which have convinced the best surgeons of this country of the propriety of the practice above alluded to, but content ourselves with referring to the work of Mr. Hodgson, on the Diseases of Arteries and Veins; to the cases published by Mr. Guthrie, in the fourth volume of the New Medical and Physical Journal, and to the Preface of the same gentleman's work on Gunshot Wounds of the Extremities.

The reasons which M. Larrey has brought forward, and which he considers adequate to justify him in abstaining from the ligature of the vessel, will not we think bear examination; they are, that a larger number of collateral branches are preserved, fewer parts are injured, and the patient avoids the pain of delicate and severe operations; but by a strange oversight the Baron forgets that in the case before us the patient actually suffered all these disadvantages without attaining the corresponding security and benefit resulting from the ligature of both ends of the artery. To use his own words, the two wounds were dilated extensively, sufficiently so as to enable him to recognize the complete division of the artery, and to clear the wound of

the coagula it contained. When it was thought advisable to do thus much, we confess that we do not conceive that much additional pain could have been inflicted, many other important parts injured, or many collateral vessels sacrificed by the execution of the only measure which was really indicated, and which would have placed the patient in comparative security.

That the subject of this case recovered is true, but this is not sufficient to prove the propriety of the practice; and we well know that as the best measures will often fail, so the worst may occasionally succeed.—ED.

ART. III. *Collezione d' Osservazioni e Riflessioni di Chirurgia di Guiseppe Flajani, Dottore in Medicina e Chirurgia, Socio del Accademia delle Scienze di Siena, Socio Corrispondente dell' Accademia Medico-Chirurgica di Vienna, dell' Accademia di Manheim, della Società dell' Arte Ostetrica di Gottinga, &c., Primario Professore di Chirurgia, e' Notomia, Litotomo e Profetto del Museo Anatomico nell' Arcispedale di Santo Spirito. Tomi 4. Roma, 1798, 1800, 1802, 1803.*

A Collection of Surgical Observations and Reflections. By G. G. Flajani, Doctor in Medicine and Surgery, &c. &c.; First Professor of Surgery and Anatomy, Lithotomist and Prefect of the Anatomical Museum in the Hospital of Santo Spirito.

THE very limited acquaintance which we even now possess of the principles and practice of medicine on the Continent at the present day, and the difficulty of obtaining information on the subject, uninfluenced by national prejudices or involuntary errors, are admitted on all hands. Italy, in particular, presents to the medical inquirer an almost untrodden path, when it is contrasted with the valuable additions we have received and are daily receiving both from France and Germany. To supply this blank, and to present our readers with what may be considered as a fair picture of the state of modern surgery in the former country, have been our motives in the selection of this work, which, though published some years since, is now, we believe, for the first time introduced to the knowledge of the profession at large in England.

The book which forms the subject of the present article, consists, as its title indicates, in a series of cases collected in the clinical practice of a large public hospital, and related with every appearance of candour and accuracy. Practical observations are occasionally added, together with an account of the

appearances after death in cases which terminated fatally, and presented any new or interesting facts. The object of the author seems to have been to afford a correct view of the practice of surgery, with all the difficulties which present themselves, and the doubts which occasionally arise.

The greatest and most striking deficiency of the work, particularly of the two first volumes, is the absence of the order and arrangement absolutely necessary for the purpose of making the histories of cases useful. With this slight exception, we consider the book as highly creditable to the talents of the author, and as a valuable addition to the records of surgical science.

We shall make no apologies for quoting at considerable length from the volumes before us, but merely premise, that, to avoid the inconvenience resulting from the want of order to which we have adverted, we shall select particular subjects, and thus concentrate in one point the scattered observations of the author on each. Whilst we do thus, we shall not unnecessarily quit the order in which the cases succeed each other ; and shall, at the same time, reserve to ourselves the privilege of bestowing or withholding our assent or approbation of the opinions advanced, or the practice adopted.

" *Imperforate Anus.*—In a foundling brought to this hospital, it was perceived that the orifice of the anus was wanting, the skin covering the buttocks was quite smooth, and presented no sign of its existence. The belly was tumid, and the child refused food. The nurse informed me that she had found some black matter, resembling meconium, in the cloth in which it had been wrapped. Having assured myself of the truth of the statement, I examined the genitals to see if there was any aperture through which the excrement could escape. Below the glans penis I observed a black spot which disappeared on being touched, but returned when the penis was compressed. On examining this spot attentively I discovered a small opening. Into this I passed a small probe which penetrated in the direction of the urethra to the rectum. This opening, of the size of a punctum lachrymale, could not give exit to the meconium collected in the rectum. To dilate it was useless, as the place was neither adapted to, nor sufficiently ample for the exit of the fæces. To have divided this canal to the rectum, where it doubtless commenced, would have been to expose the child to certain death. No other measure then remained, save that of making an artificial anus in the spot where it should naturally have existed.

" For this purpose I placed the child over the knee of a nurse, placed the fore finger of my left hand on the point of the coccyx, and made with a knife, between this and the scrotum, an inci-

sion about an inch in length through the skin and cellular substance. As no meconium flowed out, I again placed my finger in the opening, and clearly felt the point of the coccyx, but nothing which indicated the presence of the rectum filled with meconium. To avoid wounding the bladder, I employed a trocar, which I introduced from below upwards, guiding it by the thumb which rested on the point of the coccyx. It had hardly penetrated a few lines when the meconium appeared, a sure proof that the instrument was in the intestine. When this was withdrawn the meconium flowed in abundance.

" To prevent the closure of the opening I introduced a small tent, covered with an ointment of oil and wax, so as to keep the edges sufficiently open to allow the passage in future of solid matters. At the end of twelve days the opening had become callous, and the use of the tent was no longer necessary. The child was in good health, and I no longer saw it.

" Five months afterwards I was called to see it, the child being dangerously ill. It was feverish, breathed with difficulty, and the gums were red and tumid. For two days it had taken no food. On the following day, the fifth of its illness, it became convulsed and died.

" The examination of the body shewed that an appendix very similar to that of the colon, but much smaller, as it scarcely equalled the size of the smallest writing quill, proceeded from the right side of the extremity of the rectum. It passed over the prostate, between the erector and accelerator muscles, thence ran under the urethra, and reaching the vicinity of the frænum became connected with the skin, and opened there by the orifice already mentioned. It had a cartilaginous structure, so that though five months had elapsed, a probe readily passed along it."—Vol. I., p. 18.

Another case, in many respects similar, is recorded in Observation 39, Vol. IV. Here also the child passed the fæces through the urethra, but with difficulty and pain. At the end of seven months the same operation was attempted as in the former case, but without success, as nothing could be felt resembling the rectum. At the end of eight months the belly became tumid, convulsions took place, and the child died. On opening the abdomen, the intestines, particularly the colon and cœcum, were enormously distended. The rectum, about three inches in length, terminated in a funnel leading to a canal four inches long, which, running under the prostate, terminated about the middle of the urethra. Close to the point where this canal terminated in the urethra was found a cherry-stone, which had closed the opening and hindered the passage of the fæces.

The principal interest of these cases consists in their rarity, none of a similar nature having been described by the best and latest authorities on malformation of the urinary and genital organs. Vide Dr. Duncan's papers on these subjects, in Nos. I. and II. of Edin. Med. Surg. Journal.

The thirteenth observation of the first volume contains the history of a wound in the lower and back part of the neck, followed by symptoms of a peculiar nature.

" Ignazio Paulucci, a grenadier in the Castle of St. Angelo, of a plethoric temperament, forty years of age was brought to our hospital, having received a sabre wound in the lower part of the neck. It was about five fingers breadth long, beginning about the last cervical vertebræ of the right side, and extending downwards towards the scapula, with almost complete division of the transverse processes of the last cervical and two first dorsal vertebræ. The wound was wide, and bled copiously. The edges of the wound were brought together, a compressive bandage applied, some blood taken from the arm, and absolute repose enjoined. The wound suppurated, but its healing was retarded until the fifty-second day, by the separation of the transverse processes. When he had acquired sufficient strength he quitted his bed, but on putting his foot on the ground he felt the leg and thigh of the right side heavy and benumbed, precisely as happens when the sciatic or popliteal nerve have been some time compressed. In spite of continued exercise for ten days the extremity remained in the same state : I then applied dry cupping-glasses and two blisters, rubbing the whole limb with a stimulating liniment, but without any success. He left the Hospital walking with the help of a stick, as he could not rest the foot for an instant on the ground. At the end of some months he again put himself under my care. He had in the mean time employed aromatic baths and vapours, with mercurial frictions. As all these measures had been useless, I put in practice the method recommended by the celebrated Pott, consisting in the formation of two issues in the back. At the end of forty days they were closed, as the patient had gained no advantage from their use, and he again left the Hospital.

" I observed a similar case last year in a countryman: here, after a wound in the back part of the neck, there remained in like manner paralysis of the thigh and leg of the same side. The only difference that I observed in the cases of the soldier and the countryman was, that in the former the limb was wasted and insensible to external impressions, whilst in the latter it was well nourished, and equally sensible with that of the opposite side. In both every thing was tried but in vain. No author, as

far as I know, has mentioned the fact that wounds in this part produce paralysis of the corresponding lower extremity."

In Observation 15, Vol. I., a circumstance is mentioned as resulting from an unreduced dislocation of the femur on the os pubis, which the structure of the parts would render probable à priori, but of which no instances are, we believe, recorded.

" Felix Peronti entered this hospital for the cure of an induration of the left testicle, which was increased in size. An acute pain extended along the spermatic chord to the inguinal ring. The swelling was not confined to the testicle, but extended to the groin, where it felt hard and circumscribed, round and insensible to pressure. On asking if this tumour had preceded that of the testicle, he told me that in attempting to escape from prison he had fallen to the ground, and struck his thigh against a piece of wood. The tumour had arisen immediately on his falling, and had for the first days caused acute pain, with fever and difficulty in passing his urine, whilst at the same time he was unable to bend his thigh or leg. Some months afterwards he perceived that his testicle was hard, swelled, and painful. On examination, the buttock was found flatter than that of the opposite side ; the thigh was shortened so that only half the foot touched the ground, and the limb could be bent but very little. The knee and foot were a little turned out, but he walked with the help of a stick, the head of the femur having formed a sort of cavity for itself on the os pubis."

Observation 16 : A case of dislocation of the os femoris, downwards and forwards, followed by some considerations on the four different dislocations of this bone, and what he calls consecutive dislocation of it. " Violent blows," says the author, " upon the great trochanter, or upon the knee, if they do not at once produce fracture or dislocation, acting with force on the head of the bone, inevitably bruise the synovial apparatus, the ligaments, particularly that called teres, and the cartilaginous surface of the head of the femur, and of the acetabulum. The first symptom which shews itself is pain when the limb is moved, and swelling, followed by febrile symptoms. The limb for the first few days preserves its natural length and figure ; the patient can stand and walk with a little assistance. If nothing is done the motions of the limb are impeded, and the pain and swelling increase. This is the result of the increased quantity of synovia secreted, and of the inflammation of the joint. The limb then becomes longer than natural, and when the head of the bone is nearly thrust out of the acetabulum, the inter-articular ligament being suddenly stretched or torn, the limb becomes longer or shorter as it may happen. If the resolution of the inflamed

parts is not brought about, all the symptoms may increase and proceed to the formation of matter, with caries of the bones and fistulæ leading to the joint."

The author proceeds to advise " that bleedings, emollient fomentations, &c. be made use of, for the purpose of subduing the inflammation ; and that if the dislocation have already occurred, it be reduced in the ordinary manner."

He also relates a case of this kind where the head of the bone rested on the foramen ovale, and where he accomplished the reduction at the end of twenty days. But there can be no doubt from the narrative, that the nature of the case had been mistaken for that time by the surgeon in attendance, and that the dislocation was the immediate consequence of the accident. It seems equally certain, that the author has mistaken disease of the hip joint with destruction of the bones and ligaments, for a morbid affection, whose existence is denied by the best authorities, and rests on no well ascertained facts.

Observation 18, Vol. I., is that of the reduction of a dislocated shoulder, after the period of four months, communicated to the author by Professor Francesco Rossi, of Turin.

" The left arm of a robust man had been rendered immovable for about four months, when I was requested to visit him. I found the head of the humerus under the clavicular portion of the pectoralis major, where it was firmly fixed by the action of the muscles. The glenoid cavity was uninjured. I proceeded without delay to attempt the reduction by taking away ten ounces of blood, and applying emollient fomentations : I then repeated the blood-letting till deliquium ensued, and whilst this lasted I was enabled to effect the reduction by a very moderate force, to the astonishment of the assistants and of my patient. I continued the fomentations, and in twenty days he was perfectly well."

Observations 23, 24, 25, &c. *Polypi of the nose:*—We extract the following remark : " Frequently after the extirpation of a polypus, or other fleshy excrescence, another appears in the same nostril at the end of three or four days, produced, as generally supposed, by regeneration. That this is occasionally the case cannot be denied, but for the most part they existed before the extraction of the first, and only increased in size when the compression caused by the first was removed."

Polypus of the maxillary sinus:—" Antonio Buccini had enjoyed perfect health until his sixtieth year; he then suffered a copious discharge from his nose, which was stopped by the use of local astringents. The following year he perceived a swelling under the zygoma of the right side, with lancinating

pain extending to the forehead and side of the face. The pituitary membrane was tumid, and the nostril obstructed. The tears could not pass into the nose; the ball of the eye was motionless and without sight. The swelling increased to an enormous extent. About a month before his death sanious and foetid matter began to flow from his nose, from the puncta lachrymalia, and from the bottom of the orbit. He died apoplectic. After death the whole maxillary bone was found carious, and an ulcerated shapeless mass filling not only the antrum, but also the whole nose, and extending to the ethmoid bone. The orbitar process was altogether wanting, and the anterior lobe of the brain was almost wholly destroyed by suppuration."

Observation 35, Vol. i.—" Annibale Damiani, aged twenty-four, entered this hospital, having received a blow on the head from a fall. The surgeon on duty found a contusion on the right side of the occiput. His head was shaved, which shewed a swelling yielding in the middle, and firm in the circumference, which caused it to be supposed that there was depression of the bone below. By way of precaution he was bled, and a cold lotion applied. In the account the surgeon gave me, he said that he thought the contusion complicated with depression of the bone. I found the part as he had told me. On examining the patient I found that the fall, which was not great, had not stunned him; on the contrary he had risen immediately, and felt by the pain that he had struck his head. He had slept well during the night, had no head-ach, and his pulse was regular. I took this opportunity to shew to the students of surgery who were present, that contusions of the head might sometimes resemble depressions of portions of bone, but that when all the symptoms of the more serious injury was absent, the central depression and firmness of the circumference were to be attributed to the extravasation of blood, and to be treated accordingly."

Page 142, Vol. i.—It is stated as the result of long experience, that recent contusions receive more benefit from the application of cold, moderately stimulant, and spirituous lotions, than from the use of any other measures.

Observation 43, Vol. i.—" Francesco Panis, aged 35, of a robust temperament, had a severe inflammation of the left eye for two months, which terminated in almost total opacity of the cornea. After some time the eye enlarged, so that the lid could not be closed. This was followed by lancinating pains in the part, which required the use of emollients and narcotics. He remained in this state for six years, when, the symptoms increasing, he was brought to this hospital. I found the orbit

completely filled with a fleshy mass, which hid not only the lids but also the margins of the cavity ; its size and shape were those of a common orange : it was hard, livid, and covered with varicose vessels. I applied four leeches to the temple, and on the following day found the vessels less turgid, and felt an obscure sense of fluctuation. After a month had elapsed without any success, I proposed the evacuation of the contained fluid by a small trocar. This was acceded to, and scarcely had I introduced the instrument when about two ounces of a clear fluid issued with violence. The tumour became flaccid, and the pain instantly ceased. As I was very well pleased at having relieved this man from the pain he had suffered so many years, what was my surprise on the following morning, to find that the tumour had regained its size and hardness, and caused the same pains. I again introduced the trocar, and gave passage to a red fluid with some coagulated blood, nearly in the same quantity as before. To prevent the closure of the aperture I introduced a small tent, and on the following day dilated the opening with scissars, for the purpose of introducing dressings to the bottom of the cavity. As this suppurated the tumour diminished, the eyebrow and lids resumed their places, and in four months he left the hospital well, and able to supply the deformity with an artificial eye."

On the subject of chronic abscesses we meet with some valuable practical observations, which will not, we think, be the less interesting to English surgeons, from the circumstance of the practice recommended by Signor Flajani being the same as that which was introduced in this country by Mr. Abernethy.

" For fifteen years," says he, " that I have followed these simple measures, I have had the satisfaction of seeing the greater number, even of the largest abscesses, terminate favourably. Most of these cures have been performed in this public hospital not only in the presence of all the students of surgery, but also of numerous celebrated foreigners who have honoured me with their presence. My method has been to bring the parts into the most favourable state by the application of emollients for three or four days previous to puncturing the abscess with a trocar. In spite of this precaution, a piece of cellular substance will sometimes introduce itself into the aperture of the canula, and hinder the exit of the matter, or the puncture will inflame or suppurate.

" As soon as the matter is evacuated, I apply a piece of adhesive plaister over the puncture, to hinder the access of air. If the part is painful, I apply emollients, otherwise a dry compress. Ordinarily the opening is closed in twenty-four hours, and I

have seen the patient cured in fifteen days, by the use of emol-
lients only. In other cases, the abscess having re-appeared at
the end of ten, fifteen, or at most twenty days, I have had re-
course to a second, third, or even a fourth puncture. If after-
wards it suppurates, or it be necessary to keep it open, the
matter may flow out till it heals."—p. 169.

" In the first years of my practice I followed the example of
my predecessors and teachers, evacuating the matter by incision;
the patients were relieved by the flow of matter; but on the
third or fourth day violent fever occurred, the lips of the wound
became dry, respiration difficult, and death ensued in a few days.
Those only escaped in whom, from uncertainty as to the nature
of the fluid, or from the fear of wounding important parts, I
had made a small incision."—p. 167, vol. i.

At page 185 are some just remarks on the treatment of
wounds of bones, with cases and quotations from the valuable
work of Weidman, De Ossium Necrosi, proving that they will
unite and heal by the first intention, even when deprived of
their periosteum.

" But without referring to authorities or cases, what oppo-
sition can be made to the cicatrization of a bone sawn trans-
versely in amputation, particularly of the thigh, where not only
the external laminæ, but also the substance and medulla of the
bone are injured? Yet experience shews that in such cases
these parts are firmly healed in three or four weeks, without
caries or exfoliation. I do not deny that a bone may fail to
unite, and that perhaps such cases are more frequent than
they ought to be; but this may arise from the nature of the
injury, from scurvy, scrophula, or rickets, or from a bad mode
of treatment."—p. 187.

The first volume concludes with a collection of cases and
remarks on cancerous diseases of the breasts. The result of
this able surgeon's experience has confirmed the advantages to
be expected from a complete and timely removal of the disease.

" Of twenty-seven operations performed by me in the first
months after the appearance of the disease, two only were
succeeded by relapses, and required the repetition of the opera-
tion; all the others were perfectly and radically cured."—p. 276.

" After the extirpation of the tumour with proper caution, I
employ general remedies, and issues, to remove the internal
causes, and recal the suppressed evacuations which have pro-
duced the disease, which is the only means of avoiding not only
relapses, but the occurrence of other fatal diseases."—p. 278.

The second volume commences with a discourse on the state
of the public hospitals at Rome, with proposals for their reform

and regulation, addressed to the pontifical government. It is stated, that from the alienation of their funds and the neglect of their directors these institutions had become insalubrious and fatal to those who entered them, and the assertion, supported by a comparison of the mortality of late years and former ones, as proved by their registers.

The subjects mentioned as requiring regulation are: The number of hospitals; the disposition and sanity of the buildings; the division of the wards, and the separation of contagious diseases; the assistance of the officers of health; a regulated diet for the sick; a convalescent establishment; the regulation of the pharmacy.

The seventh and eighth observations of this volume are cases of aneurisms at the bend of the arm. The first is remarkable as presenting an instance of the occurrence of the disease from any other cause than that of a wound of the coats of the vessel. The case is quoted by Scarpa, in his Treatise on Aneurisms, as one of the few of that kind recorded. The tumour was opened, the upper and lower ends of the vessel tied, and the patient recovered. In the other case, an attempt to cure by circular compression a diffused aneurism, arising from a puncture of the vessel in bleeding, terminated at the end of five days from the accident in gangrene and death. On examination the artery was found open, the vein scarcely touched; the aperture was of an oval figure, three lines long and two broad, situated a few lines above the division of the trunk.

" If," says the author, " when the phlebotomist perceived the wound of the artery, from the jet and colour of the blood, he had thought rather of saving the life of the patient than his own credit, he would not have hesitated a moment to tie the vessel, an operation he was perfectly capable of performing. The wound of the artery in venæsection is not always the effect of ignorance or want of skill, but may depend on many causes, particularly on an unusual position of the vessel itself. But what proves the ignorance of the operator is the neglect of measures necessary for avoiding the dangers arising from the wound of the artery."—p. 30.

Observations 21, 22, and 23, are cases of fracture of the cervix femoris. The first is that of a man, aged 85, and terminated fatally. The limb was everted, and two inches shorter than the sound one. On examination of the parts the joint was found full of blood, and the head of the bone broken into minute fragments. In the second, after proper measures had been taken to keep the fractured parts in contact, the patient suffered so little that her friends doubted the reality of the accident.

Another surgeon was called in, who, from the state of the limb at the time he saw it, decided that no fracture had occurred. On the twenty-third day the patient made an attempt to walk; she had scarce made a few steps when she was seized with acute pain and incapability of motion. The diagnostic symptoms were now equally well marked as on the first occurrence of the accident, and the same treatment was again employed, but the patient could never walk without crutches.

The plan recommended in the treatment of these accidents consists mainly in the continued extension of the extremity. The body of the patient is fixed to the bed by a piece of cloth passed round the uninjured thigh, and crossed over the os innominatum of the same side. Another ligature is fixed to the knee on the side of the fracture, and being attached to the foot of the bed admits of the required degree of extension, with the power of increasing or diminishing it at pleasure. The limb is then surrounded with compresses, and a long splint placed on its outer side, reaching from the pelvis to the middle of the leg, where it is firmly secured.

It must be confessed that this accident seems to be one of those which, for the most part, baffles the skill and ingenuity of surgeons. Some of the most celebrated surgeons of France have either, by their writings or their practice, declared their conviction of the inadequacy of any measures at present known in preventing the deformity which is its ordinary consequence. In the Hôtel-Dieu of Paris no other measures are adopted than those of confining the motion of the limb, and placing a large pillow under the knees of the patient. At Montpellier, Delpech has renewed the challenge of Pibrac, and offered a prize of two thousand francs to any one who shall produce two thigh-bones taken from the same subject, one of which shall have been cured of fracture without the occurrence of deformity; the authenticity of the facts to be judged of by the Faculties of Medicine of Paris and Montpellier.*

With regard to the numerous different apparatus and modes of treatment recommended in this accident, each of which is vaunted by its supporters as alone capable of affecting a cure, we may remark, that the diversity of opinion which exists on the subject itself affords sufficient proof of the want of a certain and approved method; that perhaps any one plan is not equally applicable to all cases; and that there are no diseases for which so many infallible remedies have been proposed as for those which long experience has shewn to be incurable.

---

* Precis des Maladies reputées Chirurgicales. Tome I, p. 280. 1816.

We resume the analysis of the volume from which we have made this digression. The next subject of interest which it presents are some cases of hernia, which are also scattered through the other three volumes. One marked defect in the treatment of all is the employment of inefficacious and futile measures to the loss of valuable time, and an exaggerated estimation of the dangers to which the patient is exposed by, and the difficulties the surgeon meets with in, the performance of an operation, which, timely resorted to before the strangulation becomes complicated with other accidents, is in itself comparatively innocent, and in its results decidedly beneficial. The injurious consequences of such delays can be no where more strongly shewn than in the frequent occurrence in the author's cases of death, gangrene of the strangulated parts, and the formation of artificial anus, or stercoral fistula.

" Bernardino Facchino had undergone the operation for bubonocele eighteen years since; a small fistula remained, through which a part of the fæces passed : one morning, whilst making repeated efforts to expel his fæces, without the truss, which he constantly wore, he perceived the passage of a portion of intestine through the fistula, which increased in proportion to his efforts. Vomiting occurred, and he became feverish. On the following morning he entered the hospital. I found a portion of small intestine, eighteen inches in length, livid and flaccid, protruding from the fistula; the belly tumid, pulse irregular; extremities cold. I endeavoured to introduce a probe pointed knife and dilate the aperture, but this was not possible. The symptoms continued, and in a few hours he died. On examination, a portion of the colon was found adherent to the opening, where it formed a sort of funnel. A piece of the ileum was fixed in the opening of the fistula. At the part which was inflected it adhered so firmly that I could scarcely separate it with my hands."—p. 223.

At page 147 are some cases of diseases of the testicle, and some in which the operation of castration was performed. In the reflections which follow on this subject, after exposing the nature of the diseases in which the operation is the only resource, the author concludes by expressing his indignation at the conduct of those who hesitate not to perform it for the purpose of improving the voice, such conduct being " cruel to the patient who suffers, ignominious in the professor who executes, and barbarous in the parents who permit it."

Almost the whole of the remaining part of the volume is occupied by the consideration of the various diseases which occur in the vicinity of the rectum and anus. In treating of the causes and

consequences of fistulæ in ano, many cases are related in which this affection was preceded by, or alternated with, other diseases, more particularly with those of the chest. The subject is one of considerable interest, and does not seem to have received the consideration it deserves in this country. In rejecting the errors of the humoral pathology, we have, perhaps, too hastily neglected the many important phenomena on which it was founded, and which we have now learned to account for by other methods : for thus it is that our theories change daily, whilst the processes of nature remain unaltered ; and thus it must continue to be until we learn to build our theories on facts, and not to adapt facts to our theories.

Art. IV. * *Memoir sur la Fracture de l'extrémité inferieure du Perié, les Luxations et les Accidens qu'on en sont la suite. Par M. Dupuytren, Chirurgien en Chef de l'Hôtel-Dieu. (Annuaire Medico-Chirurgical des Hopitaux de Paris. 1819.)*

Chapter I.—Historical Notices.

I name fractures of the lower extremity of the fibula, those solutions of continuity of that bone, which occur so near to the articulation of the foot, that the latter, yielding to the efforts of the causes which have produced the fracture, to the weight of the body, and the action of the muscles, may be dislocated inwards.

The fracture is here the primary and principal disease, and without which the dislocation could not take place. The fibula may doubtless be fractured without dislocation of the foot ; but the latter cannot occur without the previous fracture of the fibula : it is a very common and a very serious consequence of the fracture it is true, but a consequence only. For this reason I shall designate under the title of fracture of the lower extremity of the fibula the accident which the greater number of authors, looking more to the effect than the cause, have almost uniformly treated of under the name of dislocation of the foot outwards, and which should be called dislocation of the foot inwards, considering the direction in which the astragalus passes.

---

* Although some abstracts of this valuable Memoir have appeared in the Medical Journals of this country, we have thought the importance of its materials, and the well-merited reputation of its author, sufficient reasons for presenting it to the profession in its original form. The only liberty which has been taken is the omission of the details of cases, which would have exceeded the limits of our pages.

These fractures form but a point in the immense number of diseases which afflict the human race; but this point becomes of importance when we learn that these fractures constitute one-third of those occurring in the leg; that practicians and writers agree in placing them among the most serious injuries of this class; that the symptoms which succeed them often terminate in death; that in the most fortunate cases they almost constantly leave behind them deformities and impediments to perfect progression; that no theory has yet been found to explain, in a satisfactory manner, their causes and phenomena; and above all, that we do not possess the means of curing all cases, preserving the patients from the accidents, the dangers, and deformities which accompany or follow them. The ancients have scarcely said any thing of this accident Hippocrates, whose genius embraced both medicine and surgery, and who has left so many valuable precepts and observations on fractures and dislocations, is almost the only one who has mentioned it. From the time of the father of medicine to that of Petit and Duverney, we find nothing on this subject.

J. L. Petit * only spoke of the fracture of the fibula on account of dislocations of the foot; but he shewed that such of these dislocations as take place, inwards or outwards, are never simple; that they can never take place without the previous fracture of one or other of the malleoli, and in some cases without the fracture of the tibia and fibula to a certain height. It must be confessed, however, that this great surgeon, less perfect here than on the other subjects of which he has treated, says nothing satisfactory on the signs, the causes, the mechanism, the treatment, and the consequences of this accident. Subsequent to his Treatise on Diseases of the Bones, he laid down in his posthumous works † some observations on dislocations of the foot. These, in many respects imperfect, only serve to shew the serious nature of the injury, and the uncertainty which existed as to the true principles of its treatment.

David, under the assumed name of Basyle, in a Memoir presented to, and approved by, the Royal Academy of Surgery‡, assimilated the theory of fractures of the lower end of this bone to that of " contre-coups." He considered it as the result of the violent motion of the foot outwards, whilst the fibula, driven upwards by the astragalus, and firmly fixed to the tibia at its upper part, obliged to yield to the effort and to the action of the peronei muscles, favoured by the deviation of the foot outwards,

---

* Maladies des Os. 1723.   † Traite des Maladies Chirurgicales. 1774.
‡ Prix de l'Academie Royale de Chirurgie. Vol. iv. 1771.

breaks between these two points, and particularly at its weakest part, above the malleolus externus. This theory, seducing and plausible as it appears, has the defect of being opposed to daily observation, which proves that fracture of the fibula is less frequently caused by those efforts which carry the foot outwards, than those in which it is turned downwards and inwards.

Soon afterwards William Bromfield * corrected those who consider fractures of the fibula as being of slight consequence, and shewed the bad results of the treatment directed by this opinion. He shewed the kind of displacement of the fragments of the fibula resulting from the deviation of the foot outwards, and always augmented by the use of circular bandages. He established, better than any one before him, the indications to be fulfilled; and if the compresses which he advises to be applied to the malleolus externus, for the purpose of removing the fractured bone from the tibia; if the graduated compresses, which he recommends to be placed in front in order to separate the two bones, do not suffice to fulfil these indications, we must at least admit that the measures are rational, and suggested by an accurate knowledge of the object in view.

Percival Pott † shewed that the integrity of the two malleoli and the connection of the tibia and fibula are indispensable to the solidity of the articulation of the foot with the leg; that the fracture of the lower end of the fibula destroys this solidity by removing the support which the malleolus externus furnishes to the foot on its outer side; that this want of support, changing the direction of the action of the peronei muscles, enables them to draw the foot upwards and outwards, pressing the end of the fragment of the fibula against the tibia. He accompanied this theory with an engraving, which, though coarsely executed, represents in so exact a manner this fracture and the relative change of position in the bones affected, that there can be no doubt of its having been taken from nature. But Pott, prejudiced by the idea of placing fractured limbs in a state of flexion, abandoned the consequences of the theory he had established. Besides, it is evident that this position neither suffices for reducing the luxation or preventing its return, and, consequently, for hindering the accidents and deformity by which it is so commonly attended, as has since been shewn by his countryman, William Hey.‡

Pouteau,§ in a Memoir on this subject, shewed that it might

---

* Chirurgical Observations and Cases. London, 1773.
† The Chirurgical Works of Percival Pott, 1775.
‡ Practical Observations in Surgery. 3d Edit.   § Œuvres Posthumes. 1783.

occur without the influence of any contusing body, and even without a fall, whence he concluded that it depended principally on the action of muscles. Struck with the dangers of the injury, he confesses that we possess few means of raising the depressed fragments, and fewer still for keeping them in place ; that we must consequently expect the leg to remain deformed and the foot everted, the impediment to walking being great and long continued.

Desault, whose traces are so strongly marked in most parts of surgery, did not apply his attention to this important point in the history of fractures of the leg. Two observations, in which the reduction of the bones, during the height of inflammation and swelling, put at once a stop to all the accidents, have allowed his celebrated editor to conclude, that these fractures were erroneously considered as very serious, a conclusion falsified by daily experience, not to be weakened by two isolated cases selected from those whose results were most favourable. A more just consequence would be, that the reduction of complicated fractures at any period, far from aggravating, as many think, is the most certain means of calming alarming symptoms.

Some years later M. Richerand* revived the theory of David, and enriched it by curious and instructive observations made by M. Chaussier, on the curvature which the fibula experiences from the action of muscles and the effects of old age. He insisted on the difficulty and importance of the diagnosis, as well as on the danger of the accident, but contented himself with a recommendation of separate bands and lateral splints to oppose the deviation of the foot outwards.

In 1807, M. Castella,† a pupil of the faculty of Paris, supported, at Landshut, a thesis on fracture of the fibula, which contains nothing more remarkable than the history of the author's own case. The consequence of the treatment of common fractures of the leg has been the depression of the fibula towards the tibia, the projection of the external and internal malleoli, the separation of these two apophyses, and such deformity, that eighteen months after the accident he walked with pain and difficulty ; whilst at the same period, the method adopted at the Hôtel-Dieu already boasted many cures without accident or deformity.

More recently, Charles Bell‡ has endeavoured to give a theory of this accident, and to fix the treatment best adapted to it.

---

* Leçons sur les Maladies des Os.   Paris, 1803.

† Essai sur les Fractures du Peroné.   Par J. F. P. Castella.   Landshut, 1808.

‡ System of Operative Surgery, founded on the basis of Anatomy. London, 1809.

He properly distinguishes those fractures resulting from the direct application of force to the bone from those which are the consequence of a strain ; the last seem to him most serious : he explains their formation nearly in the same manner as David, and gives a plate in explanation, evidently borrowed from Pott. For counteracting the tendency of the foot to deviate outwards, which he recognises as the object in view, he recommends the limb to be laid on its outer side upon a splint, extending from the knee to the outside of the foot, and to render its action more uniform, to place a layer of soft lint between the limb and the splint, the whole being supported by a many-tailed bandage, and the limb laid, as Pott recommended, half bent on its outer side, and consequently on the splint. It is easy to see that the indications this fracture presents have been correctly viewed, but that the measures proposed to fulfil them are inconvenient and fatiguing for the patient, besides being uncertain in their results. It is in fact evident how fatiguing must be the position of a limb resting its whole weight on a splint, and how the foot, which ought to be constantly directed inwards, must, from its weight and position, constantly second the peronei muscles which tend to draw it upwards and outwards.

This mode of treatment does not, however, seem to have been adopted, at least, generally, by Charles Bell's countrymen ; in fact, the observations recently published by John Howship,* prove that they still treat luxations of the foot and fractures of the fibula with lateral splints. His two cases are remarkable in another respect ; they point out a very common consequence of this accident when treated in the ordinary manner : it consists in a permanent or temporary deviation of the foot outwards, depending for the most part on a faulty union of the fragments of the fibula which remain applied to the tibia ; or on a simple weakness of the internal lateral ligaments, incapable of supporting the weight of the body or the action of the peronei muscles. His observations do not shew to which of these causes this deviation is to be ascribed, but he mentions a machine for affording that support to the foot which a more appropriate treatment should have rendered unnecessary.†

---

* Practical Observations in Surgery and Morbid Anatomy. London, 1816.

† Justice to English surgery requires that we should correct the error into which M. Dupuytren has fallen, when he considers Mr. C. Bell as having been the first to point out the true principles of the treatment of the accident in question ; whilst in fact he has done no more than to describe, as many others have done, the measures almost universally employed in this country since the time of Mr. Pott. In Mr. Hey's cases, the dislocations were compound, and his observations apply only to the plan of sawing off the end of the bone.

Chapter II.—Of the Articulation of the Foot.

Section i. *Of the Bones.*—Two bones give the leg its solidity. The tibia, large and strong, placed in the inner side of the limb, in the direction of the femur, is articulated above with this bone, and below with the astragalus receiving the weight of the body from the one and transmitting it to the other. The fibula, very slender, particularly at its upper part, is placed without the line of the transmission of the weight of the body, and has no articulation with the femur; it receives a point of support in its connexion with the upper part of the tibia; whilst increasing in thickness it is prolonged below it to furnish one for the outside of the foot with which it is articulated. Between these two bones exists a space filled by ligaments and muscles, but not destined, as in the fore-arm, to allow movements of rotation : the only object is to enlarge the basis of support furnished to the body by the leg, and to multiply the surfaces and spaces for the insertion and reception of muscles.

It results from the position and respective strength of the two bones that the tibia alone supports the weight of the body, and the effort of those which operate in a manner parallel to the axis of the limb, as well as the effort of the greater number of those which are applied perpendicularly to this axis, without acting on any determinate point. Hence the numerous fractures of the tibia ; and if we almost always find the fibula also broken, this has occurred consecutively, and from its incapability of supporting the weight of the body, the effort of external forces, or even the action of muscles, after the tibia has ceased to resist. It is particularly from the relations of these two bones with those of the tarsus that immediately result the solidity of the articulation of the foot and leg, and the greater or less tendency of the former to strains, fractures, or luxations. United above in a solid manner, then separated in almost the whole of their length, they approximate below, and unite in forming a cavity for the reception of the foot.

Having reached the lower part of the leg, the tibia and fibula are placed nearly in the same transverse plane ; they at first become sensibly more slender, and then enlarge in an equally marked manner, but in such different proportions, that the fibula approaches the tibia in size. They touch, and to render their union more solid, the fibula is received in a longitudinal excavation, placed on the outside of the lower end of the tibia : from this moment these two seem as though they formed but a single bone, hollowed by a sort of channel, open before and behind, and closed laterally by the prolongation of the tibia and

fibula. The openings placed in front and behind are destined to allow the extension and flexion of the foot, whilst the prolongations or malleoli oppose themselves to any lateral motion. Of the two, the internal is the shortest. Between them exists the mortise-like cavity destined to receive the foot. Its upper surface concave from before backwards, and its sides almost plane, are covered with cartilages and synovial membranes.

From the posterior upper and inner part of the foot, and from the centre of the tarsus, rises an articular eminence which is received into the cavity formed by the bones of the leg. This eminence, formed by the astragalus, flattened from side to side, convex from before backwards, has its sides a little inclined upwards, corresponding exactly to the malleoli. Thus formed, the articular protuberance and the foot, of which it forms part, may be easily moved backwards and forwards, but with great difficulty laterally from the resistance of the malleoli. Hence it results, that the fibula being chiefly destined to afford a point of support to the outside of the foot, it must be fractured for the most part in circumstances where it is called on to perform this office, and to resist the effort of forces operating in this direction. If in these cases the tibia also is sometimes found broken, it is consecutively, and not as the result of an immediate and simultaneous action on the two bones. Daily experience confirms the accuracy of these propositions.

Section ii. *Of the Ligaments.*—The nature and extent of the motions in this joint, as in all others, depend essentially on the conformation of the articular surfaces; but they are also limited, regulated and produced, as elsewhere by ligaments and muscles. Many strong ligaments, placed around the articulation of the foot, serve to unite the two bones of the leg to one another, and to those of the foot. Of those which unite the two bones, one placed at their lower part, and apparently a continuation of the interosseous ligament, extends the whole length of the groove in the tibia which receives the fibula, and is formed of numerous short fibres inserted into both bones, and confounded with the thick periosteum which covers them in this point. Two other ligaments placed before and behind the articulation, arise from the anterior and posterior edges of malleolus externus, and are inserted into the corresponding edges of the groove in the tibia. Other ligaments are destined to unite the leg and foot, and conjointly with the malleoli, to direct the motions of the first or the second of these parts. The internal lateral ligament, single, but short, thick, dense and consequently very strong, extends from the point and back part of the tibial malleolus, to the inner side and middle part of the body of the astragalus.

The external, stronger than the internal, divided into three bundles, extends in different directions from the summit of the malleolus to the astragalus, os calcis and tibia. The first bundle is the weakest, and is stretched from behind forwards, between the anterior part of the malleolus and the neck of the astragalus; the second from before backwards, between the middle outer and upper part of the os calcis. This is stronger than the former, and is enveloped in a sheath like tendons; the third is directed almost horizontally from without inwards, extending between the posterior and inner part of peroneal malleolus, and the posterior part of the astragalus and tibia, dividing into two secondary bundles, the strongest of which is fixed to the first of these bones.

Section III. *Of the Muscles.*—Four groups of muscles arising from the leg and passing on the anterior, posterior, internal and external parts of the articulation are inserted into the foot, and destined to produce flexion, extension, adduction and abduction of this part, with a slight motion of circumduction.

The flexors and extensors pass to their destination, without undergoing any other inflections than those resulting, in front from the hollow of the ancle, where their tendons are fixed by a transverse ligament; behind from the angular projection of the tarsus, which presents every where for their reception, grooves and fibrous sheaths; hence they run in the direction of the movements they are to produce, on the dorsal and plantar surfaces of the foot, where they terminate at varying distances.

The adductors and abductors pass behind the malleoli, where their tendons also pass through pullies and sheaths. From these points, instead of being directly fixed to the inner and outer sides of the foot, they are directed from behind forwards, as the flexors and extensors; whence, though from the position, they seem destined to produce adduction and abduction, yet at first, and in most cases, they assist the extensors, and in some instances only, produce those motions. Besides these last, bounded by the resistance of the malleoli and lateral ligaments, only become extensive when this resistance is accidentally destroyed. The muscles, of which we speak, then act in a much more efficacious manner, and become the cause of the displacements observed in the directions of adduction, and particularly abduction, and the source of the indications presented by these complicated accidents.

The four groups into which the muscles are divided, are far from being equal in number, force and situation. The extensors, to which may be added the adductors and abductors, are evidently

most numerous and strong. To this advantage, most of them add that of being inserted into the arm of a lever of a certain length, and exactly perpendicular to it. The flexors are at once less numerous, less strong, and less favourably placed. It is not so easy to fix the relative power of the adductors and abductors, which are nearly equal in number and force. The adductors attached to the arm of a shorter lever might be expected to yield, but joined to a part of the extensors, whilst the joint is perfect, they exceed the abductors, and constantly draw the foot inwards; and the abductors, in spite of their attachment to the longer arm of a lever, only overcome the former when the external malleolus is broken, which seems to show that this process, from its greater length, is the cause of the inferiority of the abductors to the adductors in their ordinary state.

SECTION IV. *Of some other parts situated about the Articulation.*—This short account, doubtless, suffices to shew the mechanism of the movements of the articulation of the foot, and of the displacements to which it is liable. But the accidents and dangers which follow these depend on other causes, on the nature and arrangement of the soft parts surrounding the articulation. These are all nervous, tendinous or vascular, and must suffer from distension, laceration, or compression in the slightest displacement of the foot. How, in fact, could the ligaments extending between the bones of the leg and foot escape injury? How could the tendons which cover every part of the joint, the vessels and nerves mixed with them, the cellular tissue, the aponeuroses extended between the tibia and fibula, those separating the muscles and tendons, the nerves, veins, absorbents ramifying between the skin and fascia; how could these parts fail to suffer from these displacements? How could the dense and inelastic skin, which contains and supports them all, escape, exposed as it is, not only to the violence of external causes, but to all the internal disorders which displacement, inflammation, &c., tend to produce.

SECTION V. *Mechanism of the articulation of the Foot.*—Thus disposed, the tibio-tarsal articulation presents to the body a support, without which there would be no solidity in locomotion, and to the foot the mobility necessary for movements of progression. Every thing both on the inner and outer sides is connected with this object, though doubtless here, as elsewhere, mobility diminishes solidity.

§ 1. *Transmission of the weight of the Body in a line perpendicular to the Feet.*—Considering the column which transmits the weight of the body from the thigh to the foot, as a single piece, it is found to diminish in size just above the

malleoli. From this point it enlarges, as if to embrace the astragalus; whence it results that being weaker at its lower part than in the rest of its extent, it must be more frequently fractured there than elsewhere. But this column is not formed of a single piece; two bones compose it, which could not allow much mobility without endangering solidity, and if perfectly immoveable, would impede the functions of the foot. For this reason, these two bones are so disposed as not to allow, for the most part, any motion which might be injurious to solidity; and yet to admit, in some circumstances, a mobility which facilitates and extends the lateral motions of the foot; besides, the ligaments which unite them are so strong, that if the interosseous membrane be divided, and the bones drawn asunder, the compact crust of the tibia, and still more frequently that of the fibula, into which they are inserted, shall be detached and torn off in preference to the laceration of these parts.

The foot constitutes the base of this column, forming a sort of arch, narrow behind, wider in front, flexible and elastic by means of the articulations and ligaments which unite its different parts.

The articulation of the leg with the foot is not placed in the centre of the arch, destined to support the weight of the body; in fact, if in an individual, upright and immoveable, a vertical line be drawn from the centre of the condyles of the tibia, it will fall on the inner and upper part of the astragalus, itself placed at the inner and back part of the foot; the consequence is, that a much longer arm of a lever is placed on the outer, than on the inner side, which must give the abductor muscles a marked superiority over the adductors. Considered as it regards the longitudinal axis of the foot, the point of incidence of the vertical line is such as to divide the member into two unequal parts, the anterior forming three-fourths of the whole, and the posterior the remaining fourth. These two lines unite upon the astragalus, which thus becomes the moveable centre on which rests the solidity of the body in station, walking, running, leaping, and in the accidental circumstances arising from these acts.

§ 2. *Powers destined to maintain the equilibrium of the Body on the Feet.*—It is known that the body cannot preserve its equilibrium on the feet without the action of the muscles. This equilibrium, it is true, is facilitated before and behind by the prolongations of the foot in these directions, and by the action of the numerous flexor and extensor muscles; but it is much more difficultly preserved laterally, where it cannot balance without risk in the narrow space comprised between the

malleoli, and where it can only be recovered by the action of the adductors and abductors, which are too unfavourably placed to act with efficacy.

It might be thought at first sight, that the second foot enlarging the basis of support laterally, might remedy the evils resulting from these causes; but it is easy to see that the weight of the body in walking, running, &c., being almost always supported naturally, or accidentally by a single foot, this can receive no assistance from the other, until the ligaments have already suffered more or less from the extent of lateral motion.

The muscles which give the articulation of the foot its fixity in station, are also the powers which tend to preserve it from the derangements and disorders to which it is exposed by its motions; but are these powers disposed in such a way as constantly to keep the bones of the leg in equilibrium on a basis so moveable as the foot? We are tempted to think not, when we see the inequality of the arms of the levers on which they act. This it is true is compensated before and behind, by the increased force of the muscles of the back of the leg, destined to raise the weight of the body and extend the foot; but the inequality of the inner and outer sides, far from being compensated by the predominance of the adductors, seems on the contrary increased by that of the abductors, to which must be added a part of the flexors; for such is the disposition of some of the tendons of these last muscles, that they are placed on the outer side of a line, which drawn from the heel, should extend to the point of the foot, dividing this member into two equal parts, and which must in many circumstances act in concert with the abductors on the arm of the lever into which they are inserted, giving these latter such a predominance of action, that they constantly evert the foot when the malleoli are broken.

§ 3. *Effects of the violent transmission of the weight of the Body in a direction perpendicular to the Foot.*—In the ordinary state, this transmission produces no disorder; the powers and resistances placed about the leg suffice to prevent it. This is not the case when this transmission takes place in a sudden and violent manner, as in falls upon the feet from high places. Those which take place upon the points are least serious; their effects deadened by the mobility and elasticity of the anterior parts of the foot, rarely extend to its articulation with the leg, or produce there but slight disorders. Those which take place at once upon the point and heel are followed by more serious consequences, such as the distension of the ligaments of the tarsus, the destruction of the arch formed by this part, or that of the inferior extremity of the tibia, a destruction exactly

analogous to that of the inferior extremity of the radius, so often resulting from falls on the palmar surface of the carpus.

Of all the falls of the body perpendicularly to the foot, those which take place on the heel are doubtless the most remarkable; for besides frequently giving rise to concussions of the brain or spinal marrow, to contusions of the upper and lower articulation of the femur, &c., they also determine the violent expulsion of the astragalus from its situation, and its issue through the integuments it has lacerated. Ordinarily this singular expulsion of a bone completely from its place occurs neither backwards nor laterally, but forwards, being at the same time directed more or less to the right or left.

§ 4. *Transmission of the weight of the Body in a direction inclined backwards or forwards.*—The equilibrium which so many causes tend to destroy must be often lost, if the muscles had no auxiliaries in defending the articulation menaced by a multitude of exterior agents, and in certain circumstances by themselves. These auxiliaries are the ligaments and malleoli, parts which, by their union, form an inert resistance destined to supply the action of the muscles, and sometimes to resist this action when ill directed, it tends to cause the disorders it should prevent. Although this resistance is not always adequate, it is not the less real as experience proves.

The mechanical resistances placed before and behind, consist in the prolongation of the foot in these directions, in the presence of the numerous tendons of the extensor, flexor, and even adductors and abductors of the foot, which placed principally before and behind, and inclosed in strong sheaths and pulleys, are so many mobile ligaments, which join the faculty of resistance, with that of yielding to the necessary motions. Even the lateral ligaments themselves concur in defending the articulation from the disorders which might be produced by a too extensive motion backwards or forwards. They perform a function which has not been sufficiently appreciated, that of setting limits to the motions of extension and flexion, as is shewn by the following experiments :—

Take the leg and foot of a dead subject; fix the foot in a vice, or between two beams of wood, so that it cannot be displaced; then carry the leg powerfully backwards or forwards; arrived at the natural limits of these motions, you will hear a loud cracking. Dissect the articulation, and you will find the anterior or posterior fibres of the lateral ligaments torn, or even the summits of the malleoli carried away. You will obtain the same result, if, instead of the leg on the foot, you move the foot on the leg in the direction of flexion or extension.

It seems as though such movements should produce disloca-
tions of the foot backwards or forwards. But they cannot be
caused in this way on the dead subject, and when they occur in
the living one, they are the result of a somewhat different me-
chanism ; it is such that the foot being fixed, under a bar for in-
stance, the leg resting in some part of its length on some other
body, it is suddenly changed into a lever of the first kind, in
which the power represented by the weight of the body is placed
at the upper end of the tibia, the point of support in the middle,
and the resistance at the extremity of the bone, in the ligaments
opposed to the direction in which the upper end of the tibia is
carried by the weight of the body ; a power to which they cannot
oppose an efficacious resistance, and which determines the luxa-
tion by the assistance of the intermediate point of support which
multiplies its force.

It results that the articulation of the foot presents, in the
directions of flexion and extension, a solidity which is commonly
proof against the greatest efforts, and which is much superior to
that which the malleoli and lateral ligaments afford to the sides;
thus, luxations forwards and backwards, which we might expect
to be very common, from what writers on diseases of bones have
said, are so rare, that we have scarcely observed two or three in
fifteen years, whilst in the same time we have seen some hun-
dreds of lateral displacements. No one can forget, that in
forced extension or flexion of the foot on the leg, the many
strong antagonist muscles of these motions assist in securing
the articulation from the danger which menaces it.

§ 5. *Transmission of the weight of the Body in a line in-
clined to one or other Malleolus*—Instead of all these means of
resistance, we find no other obstacle to the lateral movements
of the foot than the malleoli, and the ligaments which arise
from them ; and these, which suffice in ordinary cases to keep
these motions in their due limits, fail when the efforts which
bear upon the foot in these directions go beyond certain limits.
Besides, the malleoli and lateral ligaments do not present an
equal resistance. Considering their relative density and volume,
we might be inclined to believe that the malleoli must always
present more resistance than the lateral ligaments. But experi-
ment and observation are opposed to this idea ; in fact, if we
place the foot of a dead subject in a vice, and move the upper
part of the leg violently inwards or outwards, we shall almost
always find, that the malleoli will break at a greater or less dis-
tance from their point, or that their compact surface, into which
the lateral ligaments are inserted, will be torn off, while the
ligaments remain uninjured. During life, we see these liga-

ments support the most violent distensions and strains without laceration; and when the effort becomes excessive, not they, but the malleoli, or the bones of which they are processes, are broken. Such, as we shall afterwards shew, is the mechanism of fractures of the lower ends of the fibula and tibia. These same experiments, made with the intention of determining the effects succeeding lateral motions of the foot, lead to other equally interesting results; they shew that the lateral ligaments may be only distended, that they may be separated from the bones into which they are inserted; or, that the malleoli and extremities of the tibia and fibula themselves may be broken, according to the degree of force employed, and the mode in which it operates.

If the foot of a dead subject be placed firmly in a vice, the articulation of the foot and leg being left at liberty, and the upper part of the leg inclined with moderate force alternately to one or other side, it will be seen that the ligaments on the side to which the leg is carried will be relaxed, whilst those of the opposite side will be stretched and yield a little, but without any sensible laceration; this is what takes place in common sprains. If the upper part of the leg be carried inwards or outwards with more force, a cracking noise is heard, followed by an increased mobility, and announcing that some resistance has been overcome. The compact tissue into which the ligaments are inserted, or the periosteum, is then found torn away, while they themselves are untouched. At last, if the upper part of the leg be carried in either of these directions at once with force and rapidity, a cracking noise is heard as in the former case, but with a greater increase of mobility. Examination of the parts constantly shews;—1st, when the leg has been carried outwards, which is the same thing as a motion of the foot in that direction; that the basis of the malleolus internus is fractured without any solution of continuity of the fibula, if the fracture of the tibia has exhausted the force employed; or, if it has not, a fracture of the lower end of the fibula. Secondly, when the upper part of the leg has been carried inwards, which is equal to a similar motion of the foot, there is found a fracture of the lower end of the malleolus externus at a variable distance from its point. However extensive and violent this motion may be, there is never any solution of continuity of the malleolus internus.

One particularity must not be forgotten, that is, that the fractures of the extremity of the fibula which occurs in this last experiment, is scarcely ever followed by separation of the fragments, and still less by their displacement on the side of the

tibia, the fracture almost always remaining hid under the fibrous tissue which surmounts the malleolus; as though the same effort were incapable of causing both fracture and separation of the fragments.

In the preceding experiments the foot is immoveable; but if it be merely supported on its inner or outer edge, and allowed the liberty of yielding inwards or outwards, in a direction opposed to the motions of the leg, it is observed, that the fractures of the tibia in the movements of the foot outwards, and those of the fibula in the motions inward, constantly occur at a higher point than in the preceding experiments.

The result of these experiments then is, that an effort to carry the foot into a state of forced flexion or extension produces, according to its degree, the stretching, the rupture of the lateral ligaments, or even a laceration of the substance of the malleoli; but that on the dead body it cannot produce luxation of this part, either forwards or backwards; that a slight effort to carry the foot inwards or outwards only produces a stretching of the ligaments, a sprain; that a greater effort produces the separation of the ligaments from the malleoli, by laceration of their compact tissue, or of the periosteum which covers it, whilst the ligaments remain unbroken; this is often the case in the living subject: that a more rapid and violent motion produces, not the rupture of the ligament as might at first be thought, but that of the malleoli themselves; that in violent motions of the foot outwards, the separation of the internal lateral ligaments, or the rupture of the corresponding malleolus, always precedes the fracture of the fibula; that in violent movements of the foot inwards, the fibula is almost always fractured, whilst the internal malleolus and lateral ligaments remain untouched; that in these two cases the malleoli are fractured by dragging of their summit, which is the more efficacious in proportion as the lateral ligaments, changed in direction by the deviation of the foot, tend to become perpendicular to the malleoli. It is true that the lower end of the fibula is fractured in a violent motion of the upper part of the leg, or of the foot outwards; but it never occurs without having been preceded by rupture of the ligaments, or fracture of the internal malleolus from dragging, and then it is not the result of a pressure from below upwards of the outer side of the tarsus on the lower end of the fibula, but of a change in the line of transmission of the weight of the body, which, instead of passing in the axis of the leg and falling on the astragalus, abandons this axis, and rests on some point of the lower end of the fibula, which, too slender and too weak to support the weight of the body, breaks, commonly a few inches from its

lower extremity; in short, it results from these experiments, that the lower end of the fibula may be fractured in two principal circumstances; primitively in movements of the foot inwards, in other words by dragging *(traction)*; and consecutively to the rupture of the internal lateral ligaments or malleolus in motions of the foot outwards, that is from the transference of the weight of the body to the lower end of the bone.

If to the combined movements of the foot and leg, and to the power which in the preceding experiments produced them (representing the weight of the body), we add the action of the muscles, we shall have an exact idea of what occurs during life, in the production of sprains and fractures, as well of the malleoli as of the tibia and fibula. This is only to be found by the attentive observation of the causes and mechanism of these accidents.

Chapter III.—Of Fractures of the Fibula.

Of the powers which produce fractures of the fibula, some are immediately applied to this bone; others act intermediately by the foot; hence two sorts of fractures; the one immediate and direct, the other mediate or by contra-coup, as David calls them; accidents which differ not less in their mechanism and causes, than in their treatment and consequences.

Section i. *Fractures of the Fibula from an immediate cause.* —The situation of the body of the fibula on the outside of the leg, which seems to expose it to all external violences; its slender size; the space between it and the tibia in the middle of the leg; the support its extremities receive from that bone, all tend to render probable the fracture of its middle part; yet this fracture does not occur so often as we should expect. This arises from two causes, the defence it receives from the peronei muscles, and the rare occurrence of causes capable of producing a direct fracture. These, which are not ordinarily accompanied by deformity, and which sometimes do not hinder the patient from standing on the affected limb, can only for the most part be recognized by collateral circumstances, joined to the existence of a greater or less degree of ecchymosis and pain, an inequality of the body of the fibula more or less sensible to the finger, and a crepitation and mobility more or less distinct.

Blows on the fibula, by contusing or cutting bodies, gun-shot wounds, the fall on or passage of heavy bodies over the outside of the leg, are the ordinary causes of this kind of fracture. It supposes and requires no exertion of muscular force; it occurs in general, without being preceded or followed by

deviation of the foot inwards or outwards, and is in most cases cured by repose, without being followed by any of the symptoms which attend complicate fractures resulting from deviations of the foot. These fractures have not the same consequences, and are not so serious as those which affect the tibia; and as the fibula is almost wholly unconcerned in the transmission of the weight of the body, it frequently happens that the leg supports this weight in spite of the fracture of the middle of the bone; hence they have been not unfrequently overlooked. The treatment of these fractures then, only requires the repose of the limb in a state of demiflexion, a repose necessary for the formation of callus, and applications proper to effect the resolution of extravasated blood, and prevent the occurrence of inflammation about the fragments. An apparatus can only be required to prevent the movements to which the indocility or inadvertence of the patient might give rise.

If, however, these fractures are not ordinarily followed by luxations of the foot outwards, it is only because the muscles, which had no share in their production, do not in most instances act after their occurrence; for if they contracted powerfully, particularly when the fracture is at a short distance from the lower end of the bone, the dislocation would occur as in other instances.

Section ii. *Analogy between Fractures of the Bodies of the Fistula and Ulna.*—I cannot terminate the history of fractures of the body of the fibula without pointing out the striking analogy which subsists between them, and those of the body of the ulna, as regards the causes, the symptoms, the treatment, and the consequences.

Fractures of the body of the ulna, like those of the fibula, are always produced by blows or falls on the fractured point, in other words by causes directly applied to the bone. These fractures are scarcely ever followed by deformity or loss of power of motion of the limb, nor consequently by displacement of the fragments; and as some have been able to walk after a fracture of the fibula, so others, though having a fracture of the ulna, have been able to use the fore-arm almost as well as though it had been entire. Like fractures of the fibula, these can only be discovered by accessory symptoms, by pain and ecchymosis, by inequalities, and by a crepitation and mobility, commonly not very sensible, at the point of injury. Like fractures of the fibula they only require rest, resolutive applications, and rarely the assistance of the bandages employed for fractures of both bones of the fore-arm or of the radius only.

All fractures of the bodies of the fibula and ulna do not recover

so simply and with so little deformity; they may be followed,
though rarely, by accidents and deformities, that I have several
times observed, but which I have no design to describe. I have
seen in two three patients, and in a much larger number of
dead subjects, one of the fragments of a fractured fibula pro-
jecting outwards, and the other pushed inwards; and what is
remarkable, in two or three females, who had formerly had frac-
tures of the ulna, I found the upper fragment of this bone
strongly inclined towards the radius. The inquiries made on the
subject tended to shew that the deformity was less attributable
to the causes which had produced the fracture or to the action
of muscles, than to the employment of a very tight circular
bandage.

SECTON III. *Of Fractures of the Fibula from an indirect
Cause.*—The causes, the mechanism, the symptoms, the dangers,
the treatment, and the consequences of fractures of the fibula of
this kind are totally different from those of fractures from a
direct cause. In the first the power instead of being applied to
the fractured point does not even act upon the bone, but inter-
mediately through the foot. It is the exercise of efforts then on
this part that will determine fractures of the lower end of the
fibula.

§ 1. *Of their Causes.*—These efforts are the product of cir-
cumstances, in themselves unimportant, but which become so
from the concurrence of the weight of the body and the action
of muscles which are almost always superadded. A stone, an
excavation, or a simple inequality of the ground; the slipping
of one or other leg on a smooth body or surface; a fall from a
more or less elevated place on one or other edge of the foot; a
mistake in the number or distance of the steps in descending a
staircase rapidly or without attention; the fall of the body alone,
or with the addition of a load, on the leg half bent, the foot
being carried inwards or outwards, free or fixed between any
two bodies; such are the most common causes of this accident.
But these are as it were only occasional causes; the weight of
the body and the action of the muscles, which act powerfully and
suddenly on the lower articulation of the leg at the moment
when the foot, carried inwards or outwards, deviates from the
line in which the weight is transmitted to it, are the true efficient
causes of sprains, of fractures of the fibula and tibia at their
lower part, singly or together, and the consecutive luxations of
the foot, according to the case and the intensity of the causes.

§ 2. *Of their Mechanism.*—Experiment has already shewn
that the parts situated on the side opposite to that towards
which the foot is violently carried are those which suffer, whilst

those in this latter direction are more or less relaxed. Some observations on sprains, by putting this principle beyond a doubt, will elucidate the theory of the production of fractures of the lower end of the fibula, and their consequences. The violent distensions of the ligaments, vulgarly called sprains, may, in the foot, occur in four different directions; forwards, backwards, and to each side. The extent of flexion and extension render sprains in these directions less common than in the others; and when they occur, as we have some examples, they operate upon the anterior or posterior part of both lateral ligaments at once. On the contrary, the narrow limits of the motions of adduction and abduction render distensions of the lateral ligaments very common, and these are almost always internal or external, that is to say, they affect exclusively in the greater number of cases the ligaments placed on the one or the other side of the articulation; in fact, the foot being necessarily carried inwards or outwards, the ligaments can be distended on one side only, the side opposite to that towards which the foot is turned. Question, examine with attention an individual who has sprained his ankle, whatever may be the intensity of the pain, the extent of ecchymosis and swelling with which the accident is attended, you will constantly find, that all the symptoms have their principal seat and origin on one side of the articulation, whence they are propagated more or less rapidly to the neighbouring parts, and even to the whole joint.

The internal and external ligaments are not affected with equal frequency; the last more than the first: which can only be explained by a predominance of the adductor muscles while the joint is entire, or by the support which the opposite limb furnishes to the body in the deviation of the foot outwards, which moderates the effect of the fall. This support is wanting whenever the deviation inwards occurs, which allows the body to exert its whole weight on the external lateral ligaments. Nor are the right and left foot equally liable to sprains : the right is much the most so in both sexes; which can only be explained by the tendency that exists in all persons, and in almost all circumstances, to employ the right side of the body and its members rather than the left.

On whichever side the sprain may be, exact inquiries always shew, that when it is on the outside, the foot has been carried inwards, and vice versâ ; and that in cases of double sprain, that is, both on the inner and outer side, either the foot has been violently bent or extended, and consequently there is an anterior or posterior sprain of both lateral ligaments at the same time ; or else it has been successively carried into a state of adduction

and abduction, and then there are two sprains effected, the one after the other. The cause which produces sprains being the same as that which causes fractures of the fibula and malleoli, according to the resistance of the ligaments and bones, the intensity and mode of action of this cause, it is not uncommon to see a greater or smaller number of fractures succeed to sprains. Thus, the proportion of sprains without to sprains with fracture, was, at the Hôtel-Dieu, in 1815 and 1816, as seven and a half to one.

We shall not terminate these remarks without mentioning how much repose and pressure diminish the gravity and hasten the cure of sprains. Reasoning has long pointed out the advantages of rest in the treatment of these cases, and experience, on this point according with it, confirms them daily; but it leads to another result equally important, that pressure, whether it acts by preventing the motions of the parts, or in any other way, is still more efficacious than rest and immobility alone. We have a hundred times proved this efficacy of pressure in sprains of the foot, by applying a moderately tight bandage round the joints; but this is no where so remarkable as in the wrist, where the form of the parts facilitates the application. We have often seen at the Hôtel-Dieu very serious sprains of the wrist completely cured in twelve or fifteen days, by means of the bandage commonly used for fractures of the fore-arm, care being taken to extend it over the carpus, so as to make a single motionless piece of the hand and fore-arm, and at the same time to keep the injured ligaments compressed.

The following Tables confirm a part of the results mentioned above on sprains of the foot:—

TABLE, NO. I.

Women affected with sprains, received into the Hôtel-Dieu, in 1815.

Simple Sprains.				Total of Simple Sprains.		Double Sprains.	Sprains with Fracture.	Total of Sprains.
Internal.		External.						
Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	Rt. Foot.		
				33	11			
5	3	28	8	44		2	6	52

PROPORTION.

Of simple to double sprains, ... as 22 to 1.
Of internal to external sprains, ... as 1 to 4½.
Of simple and double to sprains with fracture, as 7½ to 1.

TABLE, NO. II.

Women affected with sprains, received into the Hôtel-Dieu, in 1816,

Simple Sprains.				Total of Simple Sprains.		Double Sprains.		Sprains with Fracture.	Total of Sprain
Internal.		External.							
Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	R.F.	L. F.		
				25	10	2	1		
5	1	20	2					7	45
				35		3			

PROPORTION.

Of simple to double sprains, ... as 12 to 1.
Of internal and external sprains, ... as 1 to 5.
Of simple and double to sprains with fracture, as 1 to $2\frac{1}{2}$.

TABLE, NO. III.

Men affected with sprains, received into the Hôtel-Dieu, in 1816.

Simple Sprains.				Total of Simple Sprains.		Double Sprains.	Sprains with Fracture.	Total of Sprains.
Internal.		External.						
Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	Rt. Foot.	Lt. Foot.	Rt. Foot.		
				36	13			
6	7	30	6			3	7	59
				49				

PROPORTION.

Of simple to double sprains, ... as 16 to 1.
Of internal to external sprains, ... as 1 to $2\frac{1}{2}$.
Of simple and double to sprains with fracture, as $7\frac{1}{2}$ to 1.

Let it not be supposed that these remarks upon sprains are misplaced: it is by efforts analogous to those which cause sprains, that fractures of the fibula, from an indirect cause, are produced. Experiment has already shewn the mechanism of their occurrence in the sudden motions of the foot inwards or outwards, and observation confirms it. In either case the cause of the fracture is a change in the line of transmission of the weight of the body: in the first case, this line, instead of passing, as it commonly does, through the axis of the tibia, and falling on the astragalus, intersects obliquely from within outwards the lower end of the tibia, and the articulation of the foot being prolonged to the external side of that member passing at the

same time through the peroneal malleolus. The parts obliged
to support the weight of the body are the malleolus externus and
the lower end of the tibia: in this case then, it is the malleolus
externus, or the lower end of the fibula which yields to the
dragging of the external lateral ligaments, now more efficacious,
as these ligaments are almost perpendicular to the malleolus,
and as this process has a point of support in the edge of the
astragalus, itself pushed by the tibia forcibly from within out-
wards. The tibia, stronger and thicker than the fibula, ordi-
narily resists, and if its malleolus be sometimes broken or torn
off, this is not primitively, but consecutively, from the effect of
the displacement of the foot outwards, the causes of which we
shall elsewhere treat of.

In the second case, that is, in movements of the foot out-
wards, the centre of gravity of the body, instead of following
the line by which it is commonly transmitted to the foot, and
thence to the ground, traverses obliquely the lower part of the
fibula, the articulation of the foot, the internal malleolus or
lateral ligaments, and falls on the ground at a greater or less
distance from the inner edge of the foot. These ligaments, and
the malleolus to which they are attached on the one hand, and
the lower end of the fibula on the other, are then the parts
which support the weight of the body and the action of the
muscles: it is they which are torn or fractured; the internal
lateral ligaments or malleolus in the first place, and then the
end of the fibula.

In which of these motions does the fracture of the lower end
of the fibula occur most frequently? This question is much
less important than might be thought, for in both cases the
treatment must be the same; besides, it is not easily answered,
either from the incapacity or inattention of most patients, or
because that in both cases the foot being turned outwards, pri-
mitively or consecutively, the patient, deceived by this circum-
stance, almost always asserts that the accident carried the foot
in the direction in which they see it. In the same manner, with
equal want of foundation, almost all those affected with luxation
of the head of the humerus into the hollow of the axilla, assure
you that they fell upon the shoulder, because they suffer pain
there; whilst the state of the elbow and of the palm of the
hand, for the most part attest the occurrence of the fall upon
themselves.

Section iv. *Signs of the Fracture of the Fibula from an in-
direct cause.*—The signs which indicate the occurrence of the
compound accident we treat, are of two kinds; the one set be-
longs to the fracture of the fibula, the other to the dislocation of

the foot. This distinction is not merely an abstract one, as the fracture of the fibula may sometimes exist without the luxation of the foot.

These signs then are of two kinds; presumptive and characteristic. The presumptive signs are the nature of the accident, a noise, a kind of crack heard at the same moment, a fixed pain at the lower part of the fibula, the difficulty, or impossibility of walking, more or less swelling about the joint of the foot, particularly about the external malleolus or lower end of the fibula. The characteristic signs are, inequality, unnatural mobility of some point of the lower end of the fibula, crepitus, more or less sensible on motion or pressure, the lateral mobility of the foot, the facility with which the lower part of the fibula may be approximated to the tibia, a change in the point of incidence of the axis of the leg on the foot, deviation of this latter outwards, and sometimes backwards, rotation in its axis from within outwards, a more or less strongly marked angular depression at the outer and lower part of the leg, the projection of the internal malleolus, the disappearance of almost all these signs on attempting to reduce the foot, and their immediate return when these efforts are suspended, particularly when the limb is placed in an extended posture.

§ 1. *Presumptive Signs.*—(a) *The kind of accident.* This sign is in itself of little value, first, because the patients rarely give an exact account of what has happened to them ; and secondly, since the same cause, according to its force and mode of action is capable of producing very different effects. Notwithstanding this, a violent motion of the foot, inwards or outwards, on an unequal surface, in slipping, descending stairs rapidly, or on an inclined plane, falling on one or other edge of the foot, &c., gives reason to suppose that a fracture of the fibula may have occurred, and should at least excite attention to those signs which may confirm its existence.

(b) The cracking and noise which are heard at the moment, are too constantly observed to be passed over. They result from the fragility and compactness of this thin and slender bone, which, forced to bend by the effort which turns the foot inwards or outwards, breaks with a clear and distinct noise, notwithstanding the soft parts which surround it ; but so many circumstances prevent the patient from hearing it, to allow of its being considered characteristic.

(c) The seat of the pain is a more significant sign. This, it is true, may depend on a simple distension of the external lateral ligaments, as well as on a fracture of the lower end of the bone. But when it is felt at this point at the moment of the accident;

when it continues in the same place; when the finger carried along the lower part of the fibula excites it in the same point, whilst it causes none below the malleoli, this pain cannot be confounded with that of a simple sprain. Even in this case it may be the consequence of contusion only; but for the most part it belongs to a fracture of the fibula, the situation of which it indicates with sufficient precision to allow its discovery by the effects of pressure in producing motion and crepitus. A hundred times, in endeavouring to appreciate the comparative value of the different signs of fracture of the fibula, we have shewn that the finger may be passed over the bones of the leg without causing the least pain to the patient, when they are not broken; but that when it reaches the injured point of one of these bones where fractured, the patient suffers pain more or less acute. A hundred times, taking this pain for our guide, we have discovered all the signs, and demonstrated all the other effects of fracture of the fibula.

(d) The difficulty or impossibility of walking may depend on too many causes, and are besides too much connected with the greater or less degree of sensibility of the patient, to be considered as a sign of great importance. But in some circumstances it becomes more so. The difficulty of walking after a sprain depends on the pain which the stretched and torn ligaments cause. This pain is lessened, and sometimes even altogether removed by exercise, to appear again after some instants repose. This is not the case after the fracture of the lower end of the fibula; here, in fact, the difficulty of walking depends essentially on the want of solidity in the articulation, and of the resistance of the external malleolus. If pain is added in this case to difficulty of motion, it is an effect and a consequence of the displacement of the fractured ends of the bone at each motion of the foot; so also, from being lessened by exercise, it augments precisely in proportion to the extent and frequency of motion, and the displacement caused by it; so too we never see a patient walk after a fracture of the lower end of this bone, without experiencing pain more or less severe, and a deviation of the foot outwards.

(e) Swelling, considered in a general way, is perhaps of less value than any of the preceding signs, whilst considered relatively to its situation, it is more significant than any of them. Every distension of the ligaments, and every contusion of the joint of the foot, may give rise to swelling; but this swelling does not occur indifferently at all points of the articulation; it takes place in the region corresponding to the stretched or contused parts, and to this region it is commonly confined. In the

fracture of the fibula, it is in general less than in sprains without fracture of either malleolus. When it exists, it is found at the height of the fractured point, and above the external malleolus and ligaments. In some cases, to this is added another swelling about the internal malleolus. It then commonly happens, that an attentive research into the manner in which the accident occurred, and the order in which the phenomena displayed themselves, shews that the fracture of the fibula having taken place, and the patient having made some attempts to walk, the foot was immediately turned outwards, which has produced a consecutive distension of the internal lateral ligaments, and the swelling seen at this part of the joint; this circumstance, far from weakening the value of the inductions, which may be drawn from the existence of swelling on the outside, on the contrary augments it by shewing its cause and its connexion with the internal swelling.

We have already said, the preceding signs, singly or conjoined, cannot prove the existence of a fracture of the fibula; but they may render it so probable as to require a similar treatment.

§ 2. *Characteristic Signs.*—The preceding signs acquire value by their union, and still more so by their concurrence with some of those we call characteristic; these last, whether isolated or combined, can leave no doubt as to the existence of fracture; such are inequalities, unnatural mobility and crepitation of the lower end of the fibula, displacement of the fragments, lateral mobility of the foot, change in the point of incidence of the weight of the body, deviation of the foot outwards, rotatory motion on its axis, increase of the space comprised between the malleoli, projection of the tibia under the skin, the obtuse and projecting angle formed by the internal malleolus, the obtuse and opening angle placed at the bottom of the fibula, the disappearace and sudden return of all these symptoms according as the foot is brought to its natural direction, or left to itself.

(a) The inequalities which result from the fracture of the fibula must not be confounded with the ridges which exist at the bottom of this bone. These inequalities are produced by the projection and depression of the fragments in different directions, and by splinters turned towards the surface of the limb. They are scarcely sensible when there is little displacement; they are more apparent in proportion as the fracture is complicated with displacement and crushing. They may be always recognized by the touch, and sometimes even by the eye, through the skin, which they elevate and nearly penetrate, as they sometimes actually do.

(b) Unnatural mobility, at any point of the lower end of the
fibula, must be carefully distinguished from the flexibility of thi
thin and slender bone, very apparent in its middle, which has n
point of support, less so at its extremities, which find one in tl
tibia.   The mobility we speak of is met with only at the low
end of the bone; it is confined to one point, which is mo
painful than any other.   It is made sensible by seizing the lower
part of the tibia with the four fingers of each hand, whilst the
thumbs, extended to the fibula, and placed at some distance from
each other, make alternate pressure on this bone, and thus
pushing one or other fragment towards the tibia, discover the
mobility, and by it the solution of continuity sought for.

(c) The motion produced in this way, or by fixing the lower
part of the leg with one hand, and with the other carrying the
foot alternately inwards and outwards, often causes a crepitus
sensible to the finger and the ear.   This crepitus, which results
from the friction of the rough ends of the fragments against
each other, is a very inconstant sign: so also it is not met with
when the mobility is inconsiderable, and when, consequently,
the friction is trifling; when the surfaces of the fragments are
not very unequal, or when they are not in contact, either be-
cause of the great displacement which has removed them from
each other, or because the soft parts interpose and separate
them.   Such too is the instability of this sign, that a moment
after having found it, we seek it in vain.   But whenever it does
exist, were it only accompanied by mobility from which it is
inseparable, it constitutes a pathognomic sign of fracture of the
fibula.

(d) The displacement of the fragments can scarcely occur
without the foot being at the same time turned inwards or out-
wards; it is the lower fragment which is most commonly dis-
placed; it is carried inwards, that is towards the tibia, perform-
ing a kind of rotatory motion on the outer and upper edge of
the astragalus, whenever the foot is forcibly carried outwards; in
that case it is not itself felt, but the upper fragment projecting
from its immobility, and from the depression of the lower one.
This latter may sometimes, but rarely, be carried outwards; and
when this occurs, it is either one of the effects of the cause
which produced the fracture, as in the cases where it happens
from a violent motion of the foot inwards; or the effect of the
rare dispositions by which the foot, instead of being carried out-
wards, is turned inwards, as we have sometimes observed, as the
consequence of a fracture of the lower ends of the tibia and
fibula.   In all cases, these displacements are easily recognized
by the finger, and even by the eye.

(e) *Lateral mobility of the foot.*—In the natural state of the articulation of the foot, the malleoli and other ligaments permit no motion of the foot laterally or horizontally; for the motions of inclination, known by the name of abduction and adduction, are not of this kind. But the unnatural mobility in question is very great when the lower part of the fibula is broken. This is shewn when, having bent the limb to relax the muscles, the leg is fixed by one hand placed at its lower part, whilst the other moves the foot from within outwards. The foot is then seen to move in a transverse line and to quit the axis of the leg, the malleolus internus projecting, the external making a rotatory motion, and all these things disappearing, when by a contrary motion the foot is restored to its situation. These movements also serve to detect fractures without displacement, and to distinguish them from simple sprains, because they are almost always followed, either by crepitation between the fragments, or by a displacement which could not exist in sprains. All these signs belong exclusively to the solution of continuity of the bone; so, when the cause which produced it ceases there, they are found alone, and may consequently be distinguished from those of luxation, which is a consecutive effect of the fracture.

(f) The change in the point of incidence of the axis of the leg upon the foot, is, when it exists, one of the most striking signs of the fracture of the fibula; the tibia and upper fragment of the fibula remaining in their natural situation, while the foot is carried outwards, appear as if it were driven inwards by a direct force. These changes of direction and relation are such, that if the axis of the leg were prolonged inferiorly, instead of falling on the astragalus, it would leave this bone, and consequently the whole foot, more or less on its outer side. It is evident that this change is at once an unequivocal sign of the fracture of the fibula and luxation of the foot inwards, and a reason for the impossibility the patients experience of bearing upon the foot, which only presents its inner edge to the ground. This change is a necessary and constant effect of the displacement of the foot when the fibula ceases to support it on the outer side, and when the peronei muscles begin to contract; the foot and external malleolus, which make part of one system, move in one direction; the tibia and upper fragment of the fibula move, or at least remain, in another. The centre of this new motion is no longer in the articulation, but in an oblique line, passing through the joint, and extending from the malleolus internus to the point of fracture in the fibula. This line is very well expressed in the engraving representing the fracture of the fibula, which accompanies the work of Pott.

(g) The displacement of the foot outwards results from the mobility of which we have spoken, called into action by the weight of the body or the efforts of the muscles ; the foot then abandons the lower surface of the tibia, by a motion which I suppose horizontal, and is placed wholly or partly on the outside of the axis of the leg. The extent of this displacement varies from some lines to an inch and a half; when it is considerable, it forms one of the most evident signs of the fracture of the fibula, and when it is trifling or does not exist, it may be increased or produced at will, by moving the foot laterally, that is from one malleolus to the other. Often also this displacement occurs, and disappears several times whilst examining or dressing the patient, particularly if the limb be left extended, and the muscles in a state of tension. One of its most remarkable and most serious effects is, the dragging, compression, or even laceration of the tendons, ligaments, vessels and nerves which surround the articulation, and turn over the ends of the tibia and fibula in these motions of the foot. Hence the pain, spasm, convulsions, inflammation, suppuration and gangrene, which so often accompany these accidents, when, from weakness or ignorance, they are not relieved by immediate reduction.

(h) Rotation of the foot on its axis. After the fracture of the fibula the foot is not carried outwards by a simple and horizontal motion, but by one which is partly from within outwards, and partly from below upwards. The result is a kind of rotation of the foot on its axis, in such a direction, that the head of the astragalus is carried inwards, the inner edge of the foot turned downwards, the sole inclined outwards, the outer edge raised, and the dorsum turned directly upwards. The extent of this rotatory motion is besides always proportioned to the displacement outwards ; it is owing to the same causes, that is to the weight of the body, or the action of the peronei muscles, when the patient has attempted to walk after the fracture. It is from these combined movements that ensue, when not corrected by a proper mode of treatment, the deformity of the foot, and all the consequent difficulties in walking which the patients experience when the fracture has been mistaken or improperly treated.

(i) The lateral and rotatory displacement of the foot is always followed by an increase in the extent of the space comprised between the two malleoli. This increase must be carefully distinguished from that resulting from ecchymosis and the swelling of soft parts. To remove this cause of error, it suffices to press slightly for some moments the soft parts over the malleoli, and then to appreciate the space between them by a comparison

with the sound side. From the deviation of the foot outwards, and from the change in the print of incidence of the axis of the leg, result many secondary efforts, not less important or characteristic than the preceding; such are the projection of the tibia inwards, the obtuse angle formed by the internal malleolus, and that seen above the external.

(k) The projection of the tibia on the inner surface of the leg, and the obtuse projecting angle formed by its malleolus, depend upon the luxation of the foot, which in turning outwards, as it were, abandons these parts and leaves them more evident under the skin. The degree of projection is relative to the extent of displacement; so we find it trifling in some subjects, more marked in others, and so much so in some cases, that the skin is raised, stretched, or even torn, that the malleolus may be seen or felt by the finger or probe, sometimes entire, sometimes broken, and the articulation laid open or untouched; disorders which constitute the most serious complications of fractures of the fibula. Below the malleolus, a hollow is commonly felt, or at least a want of resistance from the absence of any osseous part which might replace this process.

(l) The obtuse angle at the outer and lower part of the leg is more marked in proportion as the foot is more turned outwards and upwards; its existence there forms one of the most evident and certain signs, not only of the fracture of the fibula, but also of displacement of the fragments. It results from the motion of the lower fragment of the fibula, by means of which its lower extremity has been carried downwards and inwards, until it reaches the tibia, which limits this motion and the displacement of the foot outwards. But whilst the lower fragment thus yields to the effort of the foot with which it is connected, the upper one, influenced by no force, remains in place, and projects under the skin, sometimes even piercing it; hence, when we pass the finger from above downwards on the outer and lower part of the leg, we first find the projection of the upper fragment of the fibula: immediately below this a depression, sometimes sensible to the eye, with a void sensible to the finger, both resulting from the depression of the lower fragment; lastly, below this depression, the external malleolus more or less turned upwards.

The opening angle seen at the outer part of the articulation, and the projecting one existing at the inner, correspond exactly to the extremities of the line in which the weight of the body acts, when the foot being turned outwards, it traverses the leg obliquely from the bottom of the fibula to the malleolus internus.

It is remarkable that, in the fracture of the lower end of the radius, the same opening angle is observed on the side of the fractured bone, and the same salient one on the side of the ulna, and that, as in the case of the fibula, these angles are the most certain symptoms of the fracture of the radius.

(m) *Disappearance and sudden return of all the symptoms.*—The lateral and rotatory displacement of the foot, the change in point of incidence of the weight of the body, the projection of the tibia and internal malleolus under the skin, the depression of the lower fragment of the fibula, and the angle on the outside of the leg which follows it, with the torsion of the tendons of the muscles placed between the leg and foot ; all these are sometimes seen to occur from the extension of the limb, the contraction of the muscles, a sudden pain or spasm, and afterwards to disappear from contrary efforts, or from very slight attempts at reduction. When this is the case, it not only indicates that the fibula is fractured, but also that this fracture is attended with great laceration of the ligaments, and great mobility of the fragments. Nor is this the only case in which similar circumstances may serve to facilitate the diagnosis of certain fractures in the vicinity of articulations, and of luxations with or without fracture. We have observed that the facility with which the parts resume and quit their natural figure when slightly extended, is one of the best diagnostics between fracture of the neck of the humerus and luxation of the head of the bone ; between fracture of the radius and dislocation of the wrist ; between fracture of the neck of the femur and dislocation of its head. In fact, slight efforts, methodically employed, suffice to restore fractured limbs to their natural form and length, but much greater ones are necessary to reduce dislocations ; and whilst fractured limbs abandoned to themselves immediately return to their former state, those in which a dislocation has been reduced permanently retain their natural configuration.

Section. v. *Species and varieties, complications and accidents of the fracture of the Fibula.*—It must be evident from what we have said, that fracture of the fibula is rarely a simple accident, that is to say, confined to a simple solution of continuity in the bone, and that it is always accompanied or followed by circumstances which make it otherwise, and give it a gravity it would not have had without them. Such are, the height at which the bone is broken, the rupture of the lateral ligaments of the internal malleolus, or the tibia itself ; displacements of the foot inwards, backwards, and sometimes outwards ; the ascent of the astragalus and foot along the outer surface of the tibia, extravasation of blood, laceration of the skin, protrusion

of the bone, swelling, tension, inflammation, suppuration, gangrene, necrosis, delirium, fever of various kinds; circumstances which produce varieties, accidents or complications, which we shall treat of successively.

§ 1. *Simple species.*—This, from which we must set out in order to acquire an exact knowledge of the complications of this accident, is the case in which the disorder is limited to the solution of continuity of the lower end of the fibula. It is far from being the result of a subtle or useless distinction; it really exists, and the knowledge of it is equally necessary to the theory of its complications and to the practice of the art. It can only exist when the fibula has been fractured at a certain distance from its lower extremity, and when the cause which produced it is incapable of farther operation, whilst no consecutive circumstances have occurred to add to the disorder produced by the first. It is rare that these conditions are combined; the fracture more commonly occurs below the point we have mentioned, whilst the accident is removed from its simple state by the prolonged influence of the cause which produced it, or by the action of the muscle and the weight of the body. While simple, we can only have the presumptive signs of its existence; the kind of accident, the cracking noise heard at the time, the fixed pain seated constantly in one point of the lower end of the fibula, more or less swelling about the lateral ligaments, the difficulty, impossibility of walking, or even resting on the limb, and the prolongation of all these symptoms beyond the duration of a mere contusion. But if in this state of things the peronei muscles, the weight of the body or any analogous cause should act, it is followed by unnatural mobility, crepitation at some point of the bone, displacement of the fragments inward or toward the tibia, deviation and rotatory motion of the foot, change in the point of incidence of the weight of the body, &c. and other effects according to the intensity of the cause.

These observations shew how important it is, that when there is reason to suspect the existence of a fracture of this kind, the patient should keep quiet and abstain from motion. It is needless to add that rest and resolutive applications in this case suffice to effect a perfect cure in a short time.

Varieties of the simple species.—This species may depend on two circumstances which produce two varieties, that must not be confounded. In one of these the fibula is fractured at more than three inches from its lower end, a circumstance which, at the same time opposes the displacement of the foot, and all the disorder it might produce. In the other variety, the fibula is fractured at less than three inches from its lower extremity, a

circumstance which renders possible all the displacements, and all the disorders which are the consequences of this accident.

First variety.   Fractures at more than three inches from the point of the malleolus externus.—This variety is distinguished from the other by this circumstance, that no displacement of the foot does or can follow it.   This depends on the length of the lever formed by the lower fragment of the fibula, and on the integrity of the tibio-peroneal ligaments.   It only occurs where the cause has operated directly, scarcely ever in the contrary case ; for, as the production of the fracture by an indirect cause is always preceded by a violent motion, or even displacement of the foot, inwards or outwards, it is evident that it cannot occur at a point which would not allow displacement ; and as the continuation of the same cause might, after the fracture of the fibula, produce the immediate or consecutive dislocation of the foot.   The cases of this variety are always less dangerous than others, and only need rest and demi-flexion of the limb to effect a perfect cure.

Second variety.—This consists of those simple fractures where the bone has been broken by a direct or indirect cause, at less than three inches from the malleolus externus, and in which there is no displacement of the foot, although it is possible, and often occurs upon the slightest motion or effort of the patient. Although it may occur at any point less than three inches from the malleolus, it is most frequently found at two and a half inches from this process, where the fibula, weaker and more slender than elsewhere, and bent inwards by the weight of the body and the action of muscles, presents less resistance and more scope to the action of causes capable of producing the fracture.   The fracture almost always occurs at this point when it follows violent motions of the foot outwards.   It may, however, take place below this point, at that part of the bone which is lodged in the groove of the tibia ; and this is ordinarily the case when it is the result of motions of the foot inwards.   All these varieties may be recognized by the touch, from their mobility and crepitus ; they are themselves unimportant, but become so from the facility with which displacement of the foot may occur.   This symptom is found to succeed most frequently to the fracture which is situated two inches from the malleolus.

§ 2. *Complications.*—1. *Rupture of the internal lateral ligaments.*—A rupture, the separation of the point and fracture of the malleolus internus, constitute the most common complications of the fracture of the fibula ; they depend on the same causes, and are the result of simple modifications of their mode of action.   These disorders may precede or follow the fracture

of the fibula ; they precede them, when occasioned by a violent
motion of the foot outwards ; they follow them, when caused by
a motion of that part inwards. In the first case they are the
effect of the effort which fractures the fibula, and acts at the
same time on the lower part of this bone and on the inside of
the articulation. In the second case, the rupture of the liga-
ments, the separation or the fracture of the internal malleolus,
are the products of a different cause, and for their occurrence it
is necessary that the foot should be carried outwards, after the
fracture of the fibula by its motion inwards ; which can only be
caused by the attempt of the patient to support himself on his
foot, or by the efforts of the abductor muscles opposed to the
power which produced the fracture of the fibula. Whichever
of these two causes acts, the lever represented by the width of
the foot increased on the outside by the fracture of the internal
malleolus, like a balance, one side of which has been suddenly
lengthened, becomes inclined upwards and outwards ; the foot
is then luxated inwards by the weight of the body, or the action
of the muscles. The rupture of the ligaments can only be
recognized by more or less pain and ecchymosis below the malle-
olus internus, by the projection of this part inwards when the
foot is turned outwards, and more or less mobility of the foot
laterally ; it is not of much importance, for the fracture of the
fibula unites as quickly, and the foot acquires as much solidity
in the end, as though the ligaments had not been torn.

2. *Separation of the point of the malleolus internus.*—This has
the greatest analogy with the rupture of the lateral ligaments,
and is still more common. We have several times confirmed
its existence in the bodies of those who perished from crushing
of the body, preceded by the kind of accident we are speaking
of ; but they cannot be easily distinguished in the living subject.
We have, however, been able several times to ascertain during
life, and while the skin was unbroken, the separation of the
point of the malleolus, by the hard unequal bodies which accom-
panied the lateral ligaments in the motion of the foot outwards,
and still more readily, by the eye and the finger, when the skin
was torn. The separation commonly produces the same effects,
and requires the same treatment only, as the fracture of the
fibula.

3. *Fracture of the internal malleolus.*—This may always be
recognized at first, or at least in the end when the swelling has
ceased, and can never be mistaken when the skin is lacerated.
By examining from above downwards we discover a transverse
groove, or more or less separation at the height of the internal
malleolus ; and this process may be made to move from before
backwards, without affecting the tibia. Once separated from

the tibia, this process always follows the motions of the foot ;
hence it is found more or less distant from the body of the
bone; it is separated when the foot is carried into abduction ;
and it is approximated to, and even placed in contact with, the
tibia when the foot is in a state of adduction ; an effect con-
stantly produced by the use of the bandage for fractures of the
fibula.   It is remarkable that the fractures of the malleolus in-
ternus and externus, those of the olecranon and longitudinal
ones of the patella, unite firmly in a short space of time, whilst
those of the neck of the femur, and transverse ones of the pa-
tella, are consolidated with extreme difficulty and slowness.

4. *Fracture of the lower end of the tibia.*—Instead of the in-
ternal malleolus, or lateral ligaments, the lower end of the tibia
is sometimes fractured.   This solution of continuity almost
always takes place after that of the fibula, and from the opera-
tion of the same cause ; as, for instance, when the fibula, having
been fractured in a violent motion of abduction, the effort is
continued to the tibia, and the lower end of this bone rests
upon the ground ; then, instead of acting on the internal mal-
leolus, or lateral ligaments, the power is applied wholly to the
tibia, which breaks at a short distance from its lower end. Some-
times the fracture of the tibia precedes that of the fibula, of
which it is then the cause, and not the effect : this is the case
when the leg having lost its solidity by the fracture of the tibia,
the patient endeavours to support himself on his foot.   If the
latter, as frequently happens, has been turned outwards, the
lower end of the fibula breaks with the more facility, as the
fracture of the tibia has removed those obstacles on the inner
side of the articulation, which opposed this motion, and as the
whole resistance of the leg is now reduced to the fibula alone.
This fracture is almost always oblique, and accompanied by
displacement of the foot.   The obliquity depends on the nature
of the cause, and on the mode in which it operates.   This cause
at first tends to curve the bone, and then breaks it from the
convexity to the concavity of this curve.   The obliquity may
occur from within outwards, from before backwards, &c., cir-
cumstances which alone explain the diversity of the displace-
ments of the foot in the same fracture : thus we have seen the
foot at one time carried backwards, and at others inwards or
even outwards, but much more commonly backwards, which
depends on the frequency of the obliquity of the fracture of the
tibia from before backwards, and on the decided predominance
of the extensors of the foot over the other muscles.

5. *Fracture, with luxation of the foot inwards :*—I call luxation
of the foot inwards, that in which the head of the astragalus is
carried to the lower and inner part of the tibial malleolus, con-

forming in this point to the rule of naming the kind of luxation from the direction in which the bone is displaced ; in this case then, the astragalus is the bone displaced, being carried inwards, from which motion the luxation should be named, and not from that of the foot outwards, which is only an effect, a sign. This dislocation is so common, and so much connected with the fracture of the fibula, that the latter is found rarely without it, and of which it forms one of the most certain signs. Hence authors, more struck with the dislocation than with the fracture of the fibula, have almost all described the latter among the first. We have already shewn that this displacement is only a prolonged effect of the action of the causes of the fracture, or the consequence of the efforts of the abductor muscles of the foot : it can therefore only be considered as a complication, common, it is true, of the fracture of the fibula.

6. *Fracture, with luxation of the foot backwards :*—This displacement is always owing to the contraction of the muscles, and not to the causes which produced the fracture ; and as the displacement inwards depends on the peronei muscles, so that which occurs backwards depends on the action of the gastrocnemius and soleus. These, acting on the foot, no longer fixed by the malleolus externus, cause the astragalus to slip from before backwards on the lower end of the tibia, and move the lower fragment of the fibula in such a manner that the lower part of it is carried backwards, and the upper part forwards. This action of these muscles, however, only produces an incomplete dislocation whenever the internal malleolus is untouched, the foot in this case being carried outwards and backwards at the same time : but when, as often happens, the internal malleolus is broken, this displacement may be as complete as in the the simple dislocation in this direction. We then find the part lengthened behind, and shortened in front ; a semi-circular excavation occurs in the former direction, and an osseous tumour raises the tendons and ligaments of the ankle ; but whilst in simple luxations of the foot the external malleolus follows the tibia and fibula, and forms a projection corresponding to that of the internal one, it is here dragged backwards with the foot, to which it is attached by the lateral ligaments, and has no longer the same direction as the bones of the leg, to which it has now no connection. It is in these cases that the advantages of demiflexion are evident. The extension of the leg on the thigh suffices to produce the displacement in question, and demiflexion to prevent or remove it, as we have many times observed. But we do not always so readily succeed in keeping this dislocation reduced. After having reflected on the cause which has

kept it up in some patients, and resisted to the last, position and every effort to bring the foot forwards, I remain convinced that it depends on the difficulty of keeping the rounded pully of the astragalus on the articular surface of the tibia, without its slipping forwards, and particularly backwards.

7. *Fracture, with displacement of the foot outwards.*—I call that luxation of the foot outwards in which the astragalus is carried towards and below the external malleolus, whilst the outer edge of the foot is carried downwards, the sole inwards, and its inner edge upwards; the tibial malleolus disappears, and is hidden at the bottom of an opening angle, formed by the inner side of the leg and the foot; and the peroneal malleolus forms with the astragalus a salient angle, rounded off on the outside. Looking only to the change of form, situation, and connection of the leg and foot, we might suppose the case one of congenital club-foot. This displacement is one of the most rare and most difficult to explain. What are the dispositions which allow its occurrence? what force produces it? and why does it not oftener happen? Or rather, how is it that the foot is not always carried inwards and the astragalus outwards, after fractures of the lower ends of the fibula and tibia, when we see that in a state of repose, that in club-feet, and in most sprains from a false step, the foot is turned inwards, and its adductors overcome the abductor muscles? In the state of integrity of the articulation of the foot, this part drawn in different directions by these two sets of muscles, is preserved in a sort of equilibrium between these powers of the malleoli and their ligaments, which support it within and without. But neither the force nor the resistance are the same on each side. The force applied on the inner side, that is to say, the tibialis anticus and posticus, the flexor communis digitorum, and flexor longus pollicis, appears to me greater than that on the outer side, that is to say, the three peronei muscles; but the first much less favourably disposed, and acting on a much shorter lever, would lose their predominance, did not the shortness of the tibial malleolus restore the advantage to them; in fact, this process is only prolonged for some lines on the inside of the foot, and scarcely embraces the astragalus; whilst the peroneal malleolus goes much lower, and as long as it is entire prevents the foot from turning outwards.

Let us now suppose a fracture of the malleolus, or lower extremity of the fibula, the foot experiencing no greater resistance on the outer than on the inner side, must yield to the action of the abductors, superior to their antagonists, less from their number or real force than from their more favourable insertion.

Let us suppose again the external and internal malleolus broken at the same height and at the same time, for the same reasons the advantage will remain with the abductors: the outer edge of the foot would be carried upwards and the astragalus inwards, unless indeed the extensor muscles of the foot should act; for then this part, having no support on either side, would be carried outwards and backwards.

It might seem, from what has been said, that when the tibia alone has been fractured at its lower part, the foot having no support on the inner side, whilst that of the fibula and its malleolus remained on the outer, the astragalus should be constantly turned out, and the foot inwards; observation proves the contrary, and we shall soon shew that almost all fractures of the lower end of the tibia are followed by a slight displacement of the astragalus inwards, which is certainly owing to those dispositions which give the abductors a superiority over the adductors, only requiring a solution of continuity in one or other bone of the leg to display itself. The displacement of the astragalus outwards can then only arise from particular dispositions, unusual and very rare; these dispositions are the obliquity of the fracture of the tibia, and the greater or less resistance of the lower fragment of the fibula. The obliquity not only produces the over-lapping of the fragments, but also influences the direction of the displacements, the muscles capable of producing them, and the measures required for their relief. In the displacement in question, the obliquity is such that the fracture appears to have occurred from above downwards, and from within outwards, the point of the upper fragments being directed downwards and outwards, that of the lower one upwards and inwards. If to this obliquity is added a resistance on the part of the lower fragment of the fibula, it is plain that the foot being unable to turn outwards, it must be carried inwards from the operation of the causes which produce this motion in the state of integrity of this articulation.

8. *Displacement of the foot outwards and upwards.*—The foot is not only susceptible of being carried outwards, but also upwards at the same time; a double displacement which we have observed only once in nearly two hundred fractures of the fibula treated by us in the space of fifteen years; but it was so marked, that in future it cannot be mistaken or passed over in silence: it cannot occur unless the fibula is fractured, for this condition is indispensable to any displacement of the foot inwards or outwards. It requires, besides, a complete laceration of the short thick ligaments placed between the tibia and fibula, the strength of which is such that in most experiments they

resist more powerfully than the structure of the bones them-
selves. It was as a consequence of the fracture of the fibula
and of these ligaments, that in the case alluded to the astragalus
was seen dislocated outwards, and then drawn up on the outer
side of the tibia; in short, the astragalus, the malleolus externus,
and the foot, which formed but one system of parts, firmly con-
nected, were drawn first to the outer side of the leg, and then
two inches upwards on the tibia.

9. *Comminuted Fracture :*—The fracture of the fibula does
not always occur transversely or obliqeuly, and in a single place.
It may occur in several points and directions at the same time :
this is most frequently the consequence of crushing from a blow,
or from the passage of the wheel of a carriage over the lower
part of the leg. Hence results fracture with numerous splinters,
the displacement of which irritates, lacerates, and stretches the
nervous, tendinous, aponeurotic, and cutaneous tissues, and
gives rise to pain, inflammation, abscesses, gangrene, convulsions,
tetanus, &c. ; accidents which endanger even the lives of the
patients, render the cure long and difficult, retard the consolida-
tion of the parts, and produce more or less deformity in the de-
position of callus. The knowledge of the cause may give rise
to the suspicion of the existence of this complication, always
recognizable by the sight and touch, by the rugged unequal
surface of the limb, and by the mobility and crepitus felt at
several places at once. This fracture, which seems necessarily
to be so serious, only becomes so because the displacement of
the splinters causes the accidents we have mentioned. However
numerous these splinters may be, it is evident that if they remain
in the same relative position as when the bone was entire, their
existence must be nearly indifferent, and that as soon as the
swelling of the soft parts has rendered their displacement impos-
sible, they can cause no injury, and in spite of their number
must consolidate as though the fracture were simple. Such is
the object in the practice of our profession, and it is frequently
obtained by a speedy and complete reduction of the parts, and
the use of an apparatus calculated to retain them in their natural
position.

10. *Fracture, with internal disorder :*—The internal disorders
produced by fractures, hidden from sight by the skin, are still
greater than those externally apparent. They are such that,
after an attentive consideration, we can with difficulty conceive
their reparation, and particularly so completely in so short a
time. Our astonishment increases when we pass from the dis-
orders attending fractures in general to those of fractures of the
fibula in particular, and which, from the causes which produce

them, the extent and varieties of injuries which follow, and the nature of the parts affected, seem likely to be accompanied by symptoms of the most serious nature. Words here can give but a weak idea of the state of things; a description drawn from nature can alone give an idea of the extent and consequences of the injury. As to the bones, the fibula alone, or also the tibia, are found fractured; the first in every point, from its lower part to the summit of the malleolus; the second from its lower part, to the basis or summit of its appendix; both one and other transversely, obliquely, or longitudinally; in one place or in many; with or without displacement; with or without sharp splinters, moveable or adherent, in place or buried in the soft parts; the articulation of the foot is found opened or untouched, according as the tibia is or is not broken, as the displacement of the astragalus is more or less considerable. As to the soft parts, the tibio-peroneal and the internal and external lateral ligaments are more or less lacerated; the internal more frequently than the others, and in the case of considerable displacement of the astragalus inwards; the external in the case of violent motion of the fibula, and when the astragalus ascends along the outer surface of the tibia; a rare accident. When the displacements laterally, forwards, or backwards, have been very considerable, we find the sheaths, in which the tendons of the adductors and abductors move, torn open; and the tendons themselves, with the nerves placed in the same direction, stretched, twisted, compressed, displaced, wholly or partly divided by the oblique fragments belonging most commonly to the tibia; the arteries and veins, particularly the saphena interna, compressed, laid open, and surrounded by extravasated blood; the cellular tissue torn in every direction, full of reddish serum, and more frequently of blood, extending to the toes on one hand, on the other to the knee, under the skin, the aponeuroses, around the tendons, the bodies and fibres of the muscles, and the sheaths of the vessels and nerves.

Such is the short account of the disorders which accompany fracture of the fibula, and the displacements which follow them. These it is which give this accident its serious character when ill treated, and these, to the credit of the art, may be remedied by a suitable treatment.

11. *Fracture, with extravasation of blood:*—This accident, which depends on the laceration of arteries or veins, has different consequences according to the state of the blood and of the parts which contain it, and according to the treatment employed for this as well as the principal disease. If this fluid is infiltrated, that is, contained in the cells of the cellular tissue, in the

natural interstices of parts, submitted to the absorbing power of extensive and uninjured surfaces, it is commonly removed with facility; not so quickly, however, but that it leaves traces of its existence after the cure of the fracture. If, on the other hand, the blood is effused, that is, contained in the lacerated cells of the cellular tissue, in large cavities, which raise the skin, separate the soft parts, surround the fragments of the fracture, extend about the joint, and sometimes penetrate into its interior, it may then become the cause of many accidents. These are, however, less to be feared when the skin is entire; for the blood, whatever be its quantity, may then be taken up; but when this part is contused to disorganization, when it is lacerated so as to allow the admission of air into these vast cavities; when this fluid, the heat and moisture united in them, decompose the blood and produce inflammation; when copious and offensive suppuration occurs and continues, in spite of every effort in these sinuosities; then the effusion of blood becomes a very serious accident. It may be so even without laceration of the skin, when the fracture is unreduced; for the injury and irritation caused by the fragments never fail to produce an inflammation similar to, but more dangerous than the last. Hence, far from being a counter-indication to the reduction of the fracture, the effusion of blood is one of the most powerful reasons to be alleged in favour of this practice. But the plan adopted with respect to the fracture is not the only thing which influences the result of the effusion of blood. This frequently depends on the manner in which this complication is itself treated. It generally terminates well, unless the quantity of blood be very great, and the soft parts very much injured, when after the reduction of the fracture, the only means employed are resolutive sedatives if the skin inclines to inflammation, and stimulants if it appears to be in a state of inaction. But if openings are made to allow the escape of the blood, with the idea of hastening the cure, or if its quantity render absorption impossible, these openings are succeeded by inflammation and unhealthy suppuration in the cavities thus made to communicate externally; and these inflammations and suppurations, by slow fever, colliquative sweats, and purging, which conduct so many to the grave.

12. *Fracture with solution of continuity of the skin.*—The laceration of the skin is unfortunately a common consequence of the fracture of the fibula; it may occur immediately, and from the effects of the causes which produced the fracture, or it may supervene at a distant period. In the first place, it is the consequence of the displacement and projection of the fragments of

bone through the skin, and occurs exclusively on the inner side, at the height of the malleolus internus; on the outer, at the elevation of the fragments of the fracture of the fibula; but much more commonly on the inner than on the outer side. These irregular openings, with lacerated contused edges, sometimes enclose and fix the bone; and at others allow the escape of black blood, or the issue of fragments and filaments of disorganized flesh and tendons. In the second case, the opening of the skin is the effect of the formation and separation of sloughs resulting from pressure and injury, which were unable to divide the skin in the first instance, or the consequence and termination of some inflammation; or, lastly, the result of an effort of elimination, by which nature tends to throw off the blood, the matter, and in general all the parts now disorganized and deprived of life. These openings constitute one of the most serious accidents of fractures in general, and of that of the fibula in particular, whether we consider them only as a cause of the inflammation which occurs in parts more or less changed in their organizations and in their vital properties, or as a proof and a consequence of the deeper seated injuries. This influence of a lesion, apparently so unimportant, cannot be too attentively considered. It is such, that whatever may be the extent and the gravity of the internal disorders, we need not despair of their cure, so long as the skin is untouched; whilst fractures, the least serious in other respects, may become extremely dangerous from the existence of an opening in this part. All, however, are not equally dangerous. Those which succeed the fracture, the lacerations strictly so called, are the most serious of all; and it is rare but that the internal imflammation to which they give rise, is in the beginning complicated with strangulation, and in the end with numerous formations of matter. Those which succeed the inflammation, suppuration, and sloughing, appear less important.

As we should dread the admission of air, without necessity, into the midst of the effusions and internal disorders caused by the fractures, so, when this accident cannot be avoided, must we hasten to enlarge the external communication. This principle is not contradictory to that which precedes it, nor opposed to reason and experience; both shew that, when from the action of air or any other cause, inflammation has occurred in the disorganized parts, it constantly gives rise to the formation of pus, the detention of which causes pain, sinuses, denudation, necrosis, and numerous other accidents.

13. *Fracture, with tumefaction, tension, strangulation.*— These consequences of fractures cannot be separated; they may

depend on two different causes, which must be distinguished in practice. They arise, in the first place, from the fluxion which exists towards the parts which have been stretched, dragged, or torn by the bones and their displacements. This is not yet inflammation : they may disappear as rapidly as they have arisen, and not present, in their dispersion or origin, the order, the progress, the connection, or the duration which characterize this affection. At a later period they may be accompanied by heat, redness, local and general fever, and then, but then only, they assume an inflammatory character. To combat these accidents efficaciously we must attack their cause ; and to accomplish their cessation we must effect the reduction of the parts. It is true, that by the use of blood-letting, leeches, or sedatives, gangrene may be prevented; but still inflammation will occur, which alone places the patient in the utmost danger. One of the most injurious measures in these cases is the employment of emollient poultices, under the idea of lessening the swelling, changing its character a little it is true, but not its dangerous nature.

14. *Fracture, with inflammation, suppuration, &c.*—To the kind of fluxion we have described inflammation frequently succeeds, one of the most serious accidents which can complicate this or any other fracture. In this case its importance depends particularly on the nature and relations of the parts, which being all nervous, vascular, or fibrous, and confined by thick and unyielding aponeuroses, cause acute pain, tension, and strangulation, symptoms which do not even cease with the inflammation, but are continued by the suppuration until the matter has escaped. Many causes may give rise to the inflammation. The principal are, the displacement of the foot and of the broken bones, the internal disorder and irritation kept up by the splinters, in the soft parts. Pain, redness, heat, swelling, and tension accompany it here as in other parts of sufficient vitality ; but the tension, greater in this part than elsewhere, gives it an elastic renitence, which quickly follows the strangulation, an accident which may destroy the life of the parts by the excess of pressure or distension. When the state of the parts is such the danger is very great, but diminishes from the necessary subsidence of the symptoms in the greater number of cases. Should the state yield to the efforts of nature or of art, the accidents subside, and the parts return to their ordinary state. Should it persist, the limb instead of red becomes livid; the pain becomes more dull, and is replaced by a dull numbness, which, in its turn, yields to complete insensibility ; phlyctenæ, filled with reddish serum, appear here and there; the coldness of death succeeds to the burning heat of the limb; the patient congratulates himself on

the cessation of pain; but gangrene has attacked the limb. The skin, the cellular tissue, the tendons, nerves, ligaments, and sometimes the whole foot, perish, deprived of life. If the inflammation terminates neither by resolution nor gangrene, collections of matter form under the skin, around the tendons and bones, after a short calm all the symptoms of strangulation are renewed until the matter be evacuated by nature or art. Sometimes, instead of this alarming appearance, the inflammation is disguised under the more deceitful one of a phlegmonous erysipelas; the pain, heat, redness, swelling, and tension have an appearance of mildness. Sometimes these symptoms do not declare themselves until some days have elapsed, and even then present an unimportant character. Thus at first œdema and a superficial redness, accompanied by slight local heat and inconsiderable fever are observed; but these symptoms extend and acquire intensity; the pain, redness, and heat become more marked; the œdema, which yielded to the finger, is replaced by a hot, firm swelling. The fever increases, the tongue becomes dry, in some cases purging takes place; and after this state has lasted eight or ten days, obscure fluctuation, and crepitation of elastic fluids is felt here and there under the skin; phlyctenæ and sloughs form, the separation of which allows the escape of a pus and gazeous fluids, which daily pressure conducts to the openings formed for them by nature or art. The skin detached, and deprived of support by the sloughing of the subjacent cellular tissue, itself perishes; the fasciæ exposed, and granulating slowly, remain long unconnected with the integuments, and afford a serous, ill-conditioned suppuration. Diarrhœa, hectic occur, the strength diminishes, and the patient, worn out by these causes, perishes at an earlier or later period, according to his age, his constitution, or the severity of the symptoms. Examination after death always shews that this external inflammation always depends on internal disorder of the parts ; that one or more communications exist between them, and that the one is but the consequence, the extension of the other.

15. *Fracture, with pain, spasm, tetanus.*—The pain of which we wish to speak is neither the acute, sudden, and temporary pain experienced at the moment of the occurrence of the fracture, nor the circumscribed one, limited to the vicinity of the injury, and excited by pressure with the finger on the spot ; but the secondary, permanent pain, which is the consequence of the displacement of the bones, of the laceration and distension of the parts ; which is increased by the inflammation, swelling, and tension ; which is accompanied by sleeplessness, fever,

agitation, spasms, involuntary contractions, during which the fragments of the bones suffer new displacements, and the soft parts new disorders, and which, when the cause is not removed, may be carried to convulsions and tetanus; sedatives may moderate it; narcotics, in large doses, may hinder it from being felt; but as they do not remove the cause, and give the idea of an improvement which does not exist, they only inspire a fatal security. It is thus that gangrene has taken place without a corresponding degree of pain, in patients whose sensibility had been blunted by large doses of narcotics. This accident, being caused by the displacement of the parts, can only cease with it; the best means then of attacking it is to reduce the fracture, which, as it were by magic, removes the pain, spasms, convulsions, and soon afterwards the swelling, tension and strangulation of the soft parts. It is not so with tetanus : this horrible accident may, indeed, be prevented by proper precautions; but once declared, it defies the most active measures. Sedatives, &c. are useless in this case, and amputation, which removes the cause, does not generally put a stop to the effect.

16. *Nervous delirium.*—This is a complication of too much importance to be passed over in silence. A delirium without fever, sometimes without any inflammation or wound, which cannot be regarded, exclusively at least, as a traumatic delirium, which occurs indifferently in all ages, in both sexes, in every temperament, in dislocations and fractures reduced or unreduced, perfectly or imperfectly so; in hernia, wounds, operations of every kind, at all periods of surgical diseases, inflammatory, suppurating, granulating; in a word, in circumstances so various, that it seems impossible to assign a sole cause. In fact, it cannot be attributed exclusively to traumatic affections, for it is seen without them; to inflammation, for it sometimes exists without them; to the formation, abundance, defect or suppression of matter, for, in most cases, all these things occur with perfect regularity before and during its course.

It commences by incoherent words or motions, and an excitement, without any cause; but, in a greater number of cases, it all at once attacks individuals apparently in the best state; from that time there is no order, no connection, no precision in their ideas, their words, their actions; constant confusion and transposition of the idea and the name of one person, one place, or one thing with another. There is no rest night or day; constant pre-occupation with one idea, sometimes fixed, sometimes variable, and almost always connected with the age, the profession, the habits, or the usual tastes and passions of the patient. Continual movement, sometimes mode-

rate, more frequently violent; extreme loquacity; and, according to the temperament of the patient and the intensity of the delirium, menaces frightful vociferations, redness of the face, prominence and extreme brightness of the eyes, copious sweats on the upper part of the body; complete insensibility to and forgetfulness of the accident which has caused the delirium; so that patients with broken ribs, for instance, sing, vociferate, and move about without shewing the least sign of pain; others, constantly move their fractured limbs; some, even having escaped from the guards and restraints which surround them, traverse the wards leaning on the injured limb, and often on the ends of the bones which have made their way through the skin, and this, without seeming to think they have a fracture; others again, operated on for hernia, find a horrid amusement in handling the intestines, the protrusion of which they have caused by violent motions.

In the midst of this disorder, the pulse remains calm, or presents no other changes than those resulting from the violent movements of respiration and of the body; ordinarily there is no sign of fever, and the alvine and other evacuations continue as usual. This state may last two, three, four, or five days, the patient shewing no sign of appetite : it terminates almost always at the end of this time, most commonly by cure, sometimes by death. When it terminates happily, it is almost always as it commenced, suddenly, and without any apparent crisis. The patient drops asleep as though from excessive fatigue; at the end of eight, ten, twelve, fifteen, or more hours sound sleep, he awakes rather weak, but rational, completely ignorant of what has happened, sensible to his sufferings, and willing to avoid the least motion which might be hurtful to him; he demands food, and all the functions resume their usual course; from that time the primitive disease continues its accustomed progress. This delirium does not always terminate without relapse; it may appear a second and a third time, after an interval of one, two, or three days, but with diminished violence at each new attack.

This delirium may terminate in a fatal manner; and we have more than once seen the patients perish in the midst of the disorder excited in the cerebral functions. Its importance sometimes depends on the diseases with which it is complicated, the dangers and accidents of which it increases. Thus, it is more serious, as a consequence of fracture of the bones of the extremities or of the chest, and after large wounds in the neck, than simple ones of the skin or parts not essential to life. It may, however, become dangerous in itself, independent of

any affection with which it is combined : thus we have seen it produce, at the end of forty-eight hours, the death of a young and athletic person, who had only a simple burn in one of the toes, and this in spite of bleedings and the most powerful anti-spasmodics. An attentive examination of the body discovered no material or organic lesion, either in the brain, its processes and its membranes, or in any other organ.

We have long seen employed in this delirium sedatives of every kind, bleeding to syncope, revulsives to the feet, &c. without the least change in the progress of the disease, or diminution of its dangers; and we can say, with truth, that it did not cease to make its ravages in our hospital, until the moment that we conceived the idea of administering the liquid lauda-num of Sydenham by the rectum. Eight or ten drops of this preparation injected into the rectum, once, twice, three or four times, at distances of five or six hours, suffice when retained to remove the most furious delirium.

This remedy does not produce the same effects by the sto-mach, whether it be that this organ has not the same suscep-tibility as the rectum for preparations of opium, or, which is more probable, that endowed with the faculty of digestion, it changes the medicines, which the intestine absorbs without mo-difying their nature.

17. *Necrosis.*—Necrosis, after fractures in general, and that of the fibula in particular, depends on several causes. The most common is the immediate exposure of the bones to the air from the effect of the perforation or destruction of the soft parts. A second, almost as frequent, is the inflammation and suppuration which occur in the soft parts situated around the fragments, in the substance and surface of their periosteum. The greater vascularity and less density of the extremities of the bones is the reason why, in spite of the extreme disorders which take place in fractures of the fibula, we rarely see necrosis occur in this part.

If necrosis be unfrequent in the fibula itself, it is on the con-trary very common in the tendons of the lower part of the leg: it is almost always the consequence of the displacement of these tendons by the sharp edges of the fragments of the fracture, or the result of their exposure by inflammation and suppuration. It most frequently occurs in the tendons of the tibialis anticus and peronei muscles; of the tibialis anticus when the tibia is the injured bone, and of the peronei when it is the fibula. This necrosis is not an immediate consequence, but shews itself in a shorter or longer time after the displacement of the parts by the edges of the fracture. This causes pain, redness, heat, and

swelling, with an obscure fluctuation in the course of the affected tendons; the skin becomes thin and bursts; matter escapes through the opening, and is followed by sloughs until all the dead parts are discharged. Cicatrization then takes place, and the motions of the part remain, more or less imperfect, according to the extent of destruction. There is no other method of preventing this necrosis, than to replace the fractured bones, and to prevent the formation, or at least the lodgment of matter in the parts.

18. *Adynamic affections.*—A last and frequent complication of inflammatory diseases in general, and of the fracture of the fibula in particular, when followed by inflammation, is an adynamic affection, which when it is true or false, essential or symptomatic, requires treatment and measures so different, that the safety of the patient almost constantly depends on the accuracy of the distinction. The two states differ only in delicate degrees, which are not easy to observe. In the real adynamic state, the body, the limbs, and the countenance have lost all motion, all expression; the eyes are dull; the skin unctous; heat nearly extinct; the pulse is weak, slow and soft; the tongue pale or covered with a dark mucous secretion, the evacuations fœtid; there is apathy, insensibility, prostration, without re-action; the fœces seem radically destroyed.

In the false adynamic state there is no tranquillity, the features are mobile; every thing announces anxiety and dull pain; the face is flushed, and the eye has expression; the heat of the skin is considerable, acrid to the touch; the pulse may be small, but always contracted, frequent and even hard; the tongue is dry and coated in the centre, of a bright red on the edge, the thirst is intense; there is a constant alternation of prostration and re-action, an insidious mixture of shivering and heat, of weakness and strength, which sufficiently points out not a true adynamic, but a disease which at once excites and exhausts the powers of the patient. It is easy to see how such complications must add to the danger of diseases in themselves serious, and how difficult must be the treatment of affections so dissimilar; but once made known and distinguished, these complications might yield to remedies wisely chosen and ably applied, if by a fatality easily explained they did not almost constantly attack individuals already exhausted by chagrin, fatigue, misery, or antecedent diseases. It is this circumstance which so often renders them fatal. In the treatment of two such affections, there is always reason to fear that the inflammation will be increased by the use of tonics, or the adynamia by that of antiphlogistics. When this latter affection is the result of suppura-

tion, the treatment becomes less difficult and more successful. Tonics are here indicated, and they succeed much more frequently than where the adynamic is the result of the inflammation without suppuration. In the latter case, anti-phlogistics, such as small bleedings and leeches, sedative drinks, succeed much better.

Such are the complications which have carried off the very small number of patients whom we have lost after fractures of the fibula.

Chapter IV.—Treatment.

There is not, perhaps, any surgical disease, which in its treatment presents more uncertainty, more deficiency, and in general more inefficacy, than the fracture of the fibula, accompanied with luxation of the foot; nor is there any, if I am not mistaken, which, from its frequency and the serious accidents which accompany it, more imperiously demands a fixed treatment, founded on principles approved by experience. These principles naturally result from the respective disposition and uses of the two bones of the leg; from the relative length and resistance of the malleoli and lateral ligaments; from the relation of the axis of the leg to the foot; from the comparative force of the muscles which move the latter part, particularly those which carry it inwards and outwards; finally, from the study and consideration of the mechanism of the causes which produce fracture of the fibula and luxation of the foot, particularly exposed in Chapters ii and iii.

Is it not from neglecting to establish these bases, that most of those who have treated of this disease, have given an imperfect idea of it, and that the measures of treatment they have proposed, together or singly, have been always quite inadequate to its difficulties and its dangers? A view of the methods which have been, or which still are employed, will at once shew their inefficiency.

Section i. J. L. Petit gives the means of reducing dislocations of the foot by force; but he gives no cause for suspecting that which is much more difficult, the keeping them in place; for the stirrup shaped pad, and the figure of eight bandage employed by him, are ineffectual.

Lecat gave at least a plausible theory of this fracture; he did more, he pointed out the dangers of the circular bandage, which tends to carry the two fragments of the fibula towards the tibia; instead, he advised the placing of graduated compresses and splints well padded, to press the parts between the tibia and

fibula, and to keep these bones in their natural state of separation.

William Bromfield developed the same ideas, and proposed the same measures, with the addition of compresses applied to the extremity of the external malleolus, to make it perform a motion which should remove the lower fragment of the fibula from the tibia.

Pott insisted with vigour on the demi-flexion of the limb, and on the relaxation of the muscles at the time of reduction and during the treatment; doubtless an important element in the practice employed, but not alone sufficient for cure.

Desault gave a striking example, which should not be forgotten, of reduction in the height of the inflammatory symptom; but the bandage which he employed, the thick compresses which he placed about the foot, in those directions in which it inclined to displacement; the splints and tight ligatures by which he attempted to prevent these displacements; all these measures cannot be admitted as models of practice in spite of the success which attended them in two cases.

M. M. Richerand and Castella advised the usage of two lateral splints, of which one should reach the malleolus internus, while the outer one should extend below the sole of the foot. They hoped (and the observation furnished by one of them proves this hope unfounded), that the splint fixed on the outside, and attached to the inner one by ligatures, would give the foot a sufficient support to keep it reduced, and prevent new displacements.

If all these measures are considered, it will be seen that Pott has given a means of reducing, without effort or difficulty, the fracture of the fibula and dislocation of the foot, but that he has not pointed out any means of keeping the parts reduced. That Lecat, Bromfield and others, have advised with this latter intention the use of graduated compresses placed over the interosseous spaces, and destined to keep the bones separate. That in place of graduated compresses, Desault employed lateral splints and tight ligatures, with compresses in those directions in which there was a tendency to displacement; that some more recent writers have modified the lateral splints, prolonging the outer one, the inner one remaining at the height of the malleolus internus. It would be easy to show, by reasoning, that the reduction effected by ordinary measures is always incomplete; that it is so even in following the precepts too much neglected of Pott, that graduated compresses on the interosseous space, lateral splints and tight ligators, are insuf-

ficient for keeping the parts reduced, and preventing the action of the peronei muscles.

SECTION II. *Curative indications.*—The indications to be fulfilled are here, as in all diseases, the source from which the curative measures must flow. The fractures which occur at more than three inches from the lower end of the fibula, being followed by no displacement, require only rest, which suffices to prevent pain and swelling with other accidents, and to afford an opportunity for the formation of callus. The fractures which are situated at less than three inches from the lower end of the bone, require rest and immobility much more imperiously than the former, even though they be not at the time attended with displacement, but because rest and immobility are necessary in these as in other fractures, to allow the formation of callus, and to prevent the displacements to which motion might give rise. Fractures of the fibula with simple displacement of the foot, in whatever direction it occurs, require the immediate reduction of the displaced parts, if it is wished to prevent the accidents and deformities which result from non-reduction. Those in which the displacement is accompanied by rupture of the ligaments, separation of the malleolus internus, fracture of the tibia, effusion of blood, laceration of the skin, &c., require reduction still more imperiously than those in which the displacement is simple. No doubt, I believe, exists as to the necessity of this reduction, when we are called to the patient immediately after the occurrence of the accident; but a question has been made as to the propriety of reduction when the accident has happened some days, and when swelling, tension, inflammation, and strangulation have taken place. This question considered in a general way is of the highest interest; for on the manner in which it is decided often depends the loss or the safety of the patient, and in all cases the good or bad conformation of the parts. Some persons think that the reduction should be delayed until the inflammation and swelling have subsided; they found their opinion on the accidents, which, according to them, must result from the extension of the swelled and inflamed parts. But if it be true, that the pain, tumefaction, and inflammation which exist, depend on the displacement of the parts, there can be no surer method of effecting their cessation than the reduction, at whatever period we are called upon.

The disorders occasioned in the limb by the effect of the power which has produced the fracture, and by the displacements which have followed it, must, we are told, cause a dread of all attempts at reduction. But what are these disorders?

The wounding, dragging, laceration of parts, &c.; and who is there that does not see, that being caused, they are also aggravated by the displacement; that they must become more serious as their cause exists longer, and that the most sure and speedy means of producing their cessation is, as we have already said, to reduce the parts at whatever period of the accident it may be? This which reason points out, the experience of Desault has already proved, our own confirms it daily.

Temporization has in these cases two kinds of inconveniences; the first, of leaving the patients exposed to the most severe pain, to violent contractions and spasms or to tetanus, on the one hand; on the other to tumefaction, tension, strangulation, and immense inflammation; lastly, to gangrene and excessive suppuration, and in almost all cases to death. It would be easy to adduce facts in support of this assertion; but supposing what is true, that some patients recover from these symptoms, they do not escape from the consequences of the practice employed. I grant that they have escaped death; but they scarcely ever avoid those deformities which are the result of the want of timely reduction. In fact, the fracture of the fibula, which has not been reduced before the termination of the inflammatory symptoms, is almost always irreducible, at least by ordinary measures. In truth, the reduction at this time is not always impossible, or is so only from the imperfection of the means employed to effect it. But it would be strange reasoning to conclude that reduction, which puts a stop to all the symptoms, should not be effected while they exist, on the pretext that it might be done at a later period; this indeed would be to underrate the symptoms and their consequences so often fatal, compared with which deformity is of little or no importance.

Section iii. *Of the reduction.*—The ends of the fractured bone have in themselves no tendency to displacement. If displacement occurs after fracture, it can only be the result of the force which has produced the solution of continuity, or of the action of the muscles in the vicinity. The first cause lasts only for a moment, and ceases when it has produced its effect. The second cause acts as long as the muscles on which it depends. It is to this that must be referred the obstacles experienced in the treatment of fractures and dislocations. It is an obstacle which must be removed when we wish to obtain the ready reduction of these accidents.

Pott has the honour of having first established this principle with respect to fractures. Numerous examples, become common to the numerous pupils who have frequented the Hôtel-Dieu for the last fifteen years, have proved that it is not less useful in the

treatment of dislocations. Following this principle, we have discarded in our hospital the alarming apparatus for the forcible reduction of displacements, and proved that they almost constantly yield to moderate traction, provided the muscles be placed in a state of relaxation.

The first thing then to be done for the reduction of fractures and dislocations is to obtain the relaxation of the muscles, which position always effects. To this first measure we must add attention to prevent the return of those contractions, which pain, and still more the fear of pain, constantly tend to produce; and for this purpose it suffices to remove the attention of the patient from what is passing, by turning it towards other subjects, by pressing interrogatories, by sudden appeals, and frequently by severe reproaches.

These general principles apply perfectly to the reduction of fractures of the fibula, attended with displacement of the foot. Indeed, no reduction is more easily effected than this, when we have found the means of removing the resistance of the muscles. For that purpose it suffices in this, as in most fractures of the leg, to bend this part on the thigh and distract the patient's attention. The muscles immediately lose their tension, the resistance ceases as it were by magic, and the parts resume without effort, and as it were of themselves, their natural position and relations. At the same time the reduction must not be limited, in the fractures in question, to the apparent re-establishment of the natural relations of the parts. However exact the reduction effected in this way may appear, it is always imperfect, and leaves the fragments of the fracture of the fibula depressed towards the tibia. The apparent return only results from the elongation of the external lateral ligaments. While this state of things continues, the foot has a constant tendency to yield to the action of the peronei muscles, and to turn outwards. This circumstance, not generally known, explains why, in spite of the most methodical attempts at reduction, and the most exact application of the apparatus for fractures of the leg, the foot so often deviates outwards during the treatment, or after the removal of the apparatus, and principally when the patients, attempting to walk, begin to support themselves on the fractured limb.

The relaxation of the muscles and the extension of the foot in the axis of the leg, do not suffice to effect a full and complete reduction of the fracture of the fibula; there must be besides some means of elevating the fragments, of removing them from the tibia, and of placing them, as it were, in immediate apposition. It is impossible to act on the upper fragment, which is

never depressed, and is on the contrary almost always projecting. We can only operate on the lower one, and on this solely through the medium of the foot. It is, then, in the action of the foot on the external malleolus, that we must seek the means of completing the reduction of the fracture of the fibula. In the state of integrity of the articulation the malleoli yield to none of the motions of the foot; they serve, on the contrary, to limit them laterally : but as soon as they are broken, we see them obey the motions of the foot, which they follow with such exactness, that when this part is turned forcibly inwards or outwards, the malleolus, corresponding to the one or other direction, is pushed upwards and to the same side with the foot. Such is the cause of the displacement of the lower fragment of the fibula in the fractures of this bone, attended with deviation of the foot outwards. From the effect of this connection, whenever the foot is much carried to one side, and where one of the malleoli is pushed upwards, that of the opposite side is drawn downwards in the same proportion, supposing that the ligaments remain entire, which constantly happens. Hence it is seen that a means exists of raising the lower fragment of the fibula, and that this means consists in making an oblique traction upon it by carrying the foot into forcible adduction; the external lateral ligaments only admitting of extension to a certain point, must exert a force on the lower fragment so much the more efficacious, as the inner edge of the foot is more forcibly carried inwards. This is not the only advantage that this traction possesses, nor the only means that it affords, of raising the fragments of the fracture depressed towards the tibia: in fact, the foot cannot be carried into forcible adduction without causing the lower end of the tibia to become depressed, and, as it were, hidden in the depth of the articulation, whilst the astragalus is pushed from within outwards: the consequence is, that the lower fragment of the fibula, drawn downwards by the external lateral ligaments, pressed outwards by the lower end of the tibia, and supported by the edge of the astragalus, is forced by the concurrence of these powers acting at both its extremities, to perform a balancing motion (" de bascule") on the astragalus, in a direction contrary to that which displaced it, and to resume its natural position below the upper fragment of the fractured bone.

Section iv. *Of the means of keeping the parts reduced.*— These means are a consequence or an application of the principles above laid down. It is evident that the fragments of a fractured bone have in themselves, after as before reduction, no tendency to displacement; that their displacement can only be produced by the action of foreign bodies or of the muscles; that

consequently we must remove the action of the one, and prevent
that of the other kind of causes ; that the first indication may
be fulfilled by any apparatus which protects the parts from the
operation of extraneous bodies ; but that the last can only be
accomplished by rendering it impossible that the muscles should
contract ; that an apparatus, however powerful we suppose it,
must be inadequate or very inconvenient whenever it is necessary
to contend with the action of muscles.   It is evident then, that
position, which renders the reduction of the fractures so easy, is
also the first measure to be employed for keeping them reduced.
This influence of posture, which prevents the action of muscles
by their relaxation, is no where more imperiously required than
in fractures of the fibula.   We must then establish as a prin-
ciple in this case, as in all those where the muscles tend to pro-
duce displacement, that the best way of preventing it is to inca-
pacitate these organs from contraction.   It is what we do, in
imitation of Pott, in the treatment of common fractures of the
limbs ; it is even what we have long practised with success in
fractures of the neck of the femur, which, till that time, had
resisted the application of this principle, and which had only
been treated by apparatus for producing extension, the inefficacy,
the inconveniences, and the dangers of which are, I believe,
not contested by any person of candour.

§ 1. *Of the means of keeping the luxation inwards reduced.*—
The fracture of the fibula, which is attended by dislocation of the
astragalus inwards, requires in all cases an apparatus which
shall keep the foot turned inwards, the tibia pushed outwards,
the lower fragment of the fibula raised, separated from the tibia,
and in the direction of the upper fragment of the bone.   If, to
the advantage of fulfilling these indications, this apparatus can
join those of being so simple in its mechanism, that it may be
understood by the least intelligent, of being made of substances
so common that they may be found everywhere, of being so
easily applied that they present no difficulty even to the least
skilful ; this apparatus must combine all the conditions which
ensure lasting success to surgical instruments—efficacy and
simplicity.   Such is, if I am not mistaken, that which we have
employed for fractures of the fibula since the year 1806.   It
consists in a pad, a splint, and two bandages.   The pad made of
linen, and about two-thirds filled with tow, &c., must be two
feet and a half long, four or five inches wide, and three or four
thick.   The splint, eighteen or twenty inches long, two inches
and a half wide, and three or four lines thick, must be made of
strong inflexible wood : one of those employed for the fracture
of the leg may serve this purpose.   Lastly, the two bandages

made of linen, which has been used, must be four or five yards long. The pad, doubled on itself in the shape of a wedge, must be applied on the inner side of the fractured limb, and extended along the tibia, its basis turned downwards, and resting upon, without going lower than, the malleolus internus, the summit directed upwards, and lying on the internal condyle of the tibia: in this way it protects the limb from the splint; it affords to the latter a point of support, which keeps it at the distance of some inches from the inner edge of the foot; lastly, it serves to push the tibia outwards. The splint, applied lengthwise on the pad, must project five or six inches beyond its lowest part, and be prolonged three or four inches below the inner edge of the foot.

If these two parts of the apparatus thus disposed be fixed to the leg by one of the bandages below the knee, it is easy to see that the splint, prolonged below the pad, and leaving a space of several inches between itself and the foot, will furnish a point of support for carrying the foot from without inwards; for this purpose it will suffice, that the second bandage, after having been fixed round the lower end of the splint, be carried from this point alternately towards the heel and the bend of the ancle, embracing the splint and each of these parts in circles, which, when drawn as tight as is thought proper, cross each other in a figure of eight on the splint, which affords them, at the same time, a support. This part of the apparatus is, therefore, a lever of the first kind, in which the point of support is at the base of the pad, a little above the malleolus internus, and the power as well as the resistance at the extremities.

It is clear that thus acted on, the foot must yield to the lower bandage, aided by the elasticity of the splint, which both tend to bring it inwards; and that, in proportion as the foot yields to this double force, the tibia, pressed by the base of the wedge which the pad forms, and on which the whole apparatus rests, must, as well as the astragalus, be pushed outwards. Lastly, it will be seen that the lower fragment of the fibula, pushed out by the tibia above, drawn inwards by the external lateral ligaments below, must perform a balancing motion on the outer edge of the astragalus opposed to that which displaced it, and by which it is brought into its natural position.

If we wish to effect a complete reduction, we must not confine ourselves to bringing the foot under the leg; it is necessary that, continuing the force of reduction, the contentive apparatus should bring the foot as much inwards as it has been carried outwards by the action of the peronei muscles; this is the principle: its execution presents no difficulty, is subject to

no inconvenience, not even that of causing pain. The most that may result from it is, that the foot, after having been kept during the treatment in forced adduction, may not return to its ordinary position immediately on the removal of the apparatus; an inconvenience so trifling that it would not deserve mention, was there not a mode of removing it in a few hours, which should be pointed out; namely, the application of the same apparatus on the opposite side of the leg.

§ 2. *Of the means of keeping the luxation backwards reduced.* —The preceding apparatus answers, in all cases of fracture of the fibula, with dislocation of the foot inwards, and in those of luxation of the foot outwards only, or, at the same time, outwards and upwards. To render it applicable to these latter dislocations, it suffices to place on the outside, or along the fibula, the apparatus which is ordinarily placed on the inside, or along the tibia. This difference in the position of the apparatus is required by the necessity of applying it on that side of the leg towards which it is wished to bring the foot; in other respects, the application is regulated by similar principles in both cases.

It is quite otherwise with the luxation of the foot backwards: this presents greater difficulties, whether in reducing the parts, or in keeping them reduced. We have already said, that this dislocation cannot occur without the previous fracture of the fibula, and the separation of the internal malleolus at its basis, or its point; whence it results that the foot acted upon by the extensors and flexors at the same time, and no longer retained in its place by the malleoli and their ligaments, yields to the action of the gastrocnemius and soleus muscles, and the astragalus is drawn behind the tibia, while the latter is pushed forwards under the tendons and skin of the ancle.

Reduction here presents more difficulties than in displacements of the foot inwards. This depends on the opposition which the muscles make to the elongation of the parts, and the restoration of their natural relations. This resistance, it is true, is diminished in this as in all fractures, by relaxing the muscles and distracting the patient's attention; but, whilst in fracture of the fibula with luxation of the foot inwards, these measures serve to restore without effort the parts to their natural state, in the displacements in question, a pretty powerful effort is required to bring the foot from behind forwards, and to replace the astragalus under the tibia. Nor is even this the greatest difficulty; it consists in keeping the parts reduced during a time necessary for the consolidation of the broken bones and torn ligaments. In fact, the upper surface of the

astralagus convex from behind forwards is so smooth that the tibia can with difficulty rest perpendicularly on the pulley of this bone, and tends constantly to slip forwards, while the astragalus itself, acted on by the extensor muscles of the foot, the force of which is much greater than that of the flexors, has a continual tendency to slip behind the lower part of the tibia. It is to this double tendency that it is necessary to oppose an efficacious resistance, if we wish to cure without deformity this not unfrequent variety of the fracture of the fibula.

After having long sought in vain a method of this kind, I think I have at last found an apparatus which satisfies all the conditions of this accident. This measure consists, independently of the half-bent position which is the principle and basis of all methodical treatment of fractures, in an apparatus which presses and pushes the foot from behind forwards, and the tibia from before backwards. This apparatus is composed of the same parts as that for the fracture with luxation inwards, with the addition of a little pad some inches square, filled with hair, tow, &c. The large pad doubled like a wedge, and placed on the back part of the leg, must extend from the heel to the hollow of the ham, its base turned downwards, and its point upwards; on this pad the splint must be applied, and fixed by one of the bandages at the upper part of the leg. The second bandage must embrace the lower end of the splint and the leg; it is the really acting part of the apparatus; the turns of this bandage, acting on the splint and the tibia, carry by one effort the heel forwards and the tibia backwards; and such is the power of this mechanism, that we have only to guard against its too great efficacy: in fact, we have sometimes seen it fatigue the heel and the lower part of the leg. But this inconvenience can only result from an unnecessary exertion of force. It may be prevented, in all cases, by covering the tibia with the square pad, which effectually preserves it from the immediate pressure of the bandage. Fractures of the fibula, complicated with luxation of the foot inwards and backwards at the same time, almost always recover by the treatment of the predominant displacement of the two; in an opposite case, it is easy to combine the two kinds of apparatus, so as to fulfil the double indication presented by the complicated accident in question, that is to carry the foot forwards and inwards. The measures which we have just exposed form the basis and principal part of the treatment of all fractures of the lower end of the fibula; for as, in the greater number of cases, the displacement which accompanies them is the first cause of the symptoms which follow, these symptoms must cease with the displacement of

the parts, and as a necessary consequence, the complications must lose a great part of their danger. From this period the accident resumes the course common to all fractures, and from this time, also, its consequences present nothing which there is occasion to mention in this Memoir.

Section v. *Parallel between the old and new methods.*— Perhaps it may be said, that the common apparatus for fractures of the leg, simple or modified, would suffice to cure those cases of which we have treated equally well with the one we propose. To this objection several decided answers may be given : first, that the common apparatus, simple or modified, does not prevent the accidents and deformities, which almost always accompany or follow fractures of the fibula : second, that the common apparatus has never sufficed to continue the good effects of the special one when substituted for it, while, on the contrary, the latter has constantly removed the bad effects which the other had failed to hinder. Under whatever circumstances, therefore, we compare the old and the new methods, it is evident that the first are inferior to the second ; for they can neither hinder the deformities and accidents of the fractured fibula, nor even keep reduced the parts which the latter so easily retains in position ; that the new method is superior to the other, because it almost constantly prevents the accidents, and always the deformities of the fracture of the fibula ; and, lastly, because, in all cases where the new has preceded or followed the old method, it has constantly produced effects which the latter either could not continue or bring about. Here ends all parallel between the methods employed for the fracture of the lower end of the fibula, from the want of an object of comparison. In fact, as far as I know, art possessed no means of opposing the displacement of the foot backwards which so often attends this accident. The indications in the latter case cannot vary ; but is the apparatus we employ the most proper to fulfil them ? Experience alone can answer this question.

Section vi. *General effects and results of the new method.*— There is no want of facts to appreciate in itself and without any parallel the method we have just described ; two hundred and seven individuals treated by this method in the Hôtel-Dieu and in private practice, either by ourselves or the practitioners who have adopted it, will furnish the basis of the judgment to be formed. Its first and most important effect, that of which all the rest are as it were but a consequence, is the return of the foot to its place and natural relations with the leg. From this first, a second not less important effect results ; it is a reduction

so perfect of the fragments of the fracture, that in spite of the extent of displacement, it is not possible in almost any case, when the treatment is finished, to find the least trace of the accident or the deformity which it produced. A third effect of this mode of treatment is the almost immediate cessation of the acute pain caused by the displacement. It is evident that this pain, depending on the injury and irritation of the soft, tendinous, and other parts about the fracture, must cease when the reduction has removed its cause. A fourth effect connected with the preceding, is the rapid diminution of the swelling, tension and constriction which take place about the articulation. These accidents must cease with the displacement on which they depend, and the case then becomes simple.

Other effects not less important result from the exact reduction of the displacements and fractures, and from the cessation of pain, swelling and tension, which follow them. The removal of these causes of secondary accidents prevents spasms, contractions, tetanus; also the frequent occurrence of dangerous inflammation, suppuration and gangrene; facilitates the absorption of effused blood; allows the cicatrization of the wounds of the skin; brings about the reparation of the internal disorders of the parts, and affords time for the separation of the bony and tendinous parts which have perished; and lastly, removes all the gravity of these accidents when it has not been possible to hinder their occurrence.

A general view of the fractures of the fibula, treated by this method, shall conclude the Memoir, and will at once point out the most remarkable circumstances in the accident, and the most obvious effects of the treatment. These fractures have been, according to seasons and other circumstances, in the variable proportions to other fractures of the leg, of 1 to $1\frac{1}{2}$, 1 to 2, 1 to 3, 1 to $3\frac{1}{2}$, 1 to 4, and sometimes even less. Omitting small fractions, of two hundred and seven fractures of which I possess authentic and detailed observations, it appears, that seven-tenths have affected the right leg; three-tenths only the left leg.

That, with respect to their causes, six-tenths have occurred as the consequence of violent motions of the foot into adduction; three-tenths as the consequence of violent motions of the abduction; one-tenth from blows, or the passage of heavy bodies over the lower and outer part of the leg.

That, with respect to their situation, five-tenths took place at two inches from the point of the malleolus externus; three-tenths below this point, and into the articulation of the fibula with the tibia, or even with the astragalus; two-tenths above

this point. Those which existed between the summit of the malleolus and two inches above it were often complicated with displacement; the others rarely so.

That, with respect to their state, nine-twelfths consisted in a simple oblique or transverse solution of continuity at one point of the bone; they were generally the result of violent motions of adduction or abduction; two-twelfths in a double solution of continuity, or at two points more or less distant; the greater part were the result of the immediate action of force on the bone. One-twelfth in a greater or smaller number of solutions of continuity and fragments; these were cominuted, and generally the result of crushing.

That, with respect to displacements, two-twentieths were without displacement and rupture of the internal lateral ligaments, separation or fracture of the tibial malleolus. All recovered in a month's treatment, without deformity or difficulty. Eighteen-twentieths were accompanied by displacement in different directions. Of these eighteen-twentieths, something less than fourteen-twentieths, were accompanied with displacement inwards more or less marked, that is to say, of the astragalus towards the malleolus internus, and of the foot outwards or in abduction; and amongst them four-twentieths occurred without apparent laceration of the internal lateral ligaments, and without fracture of the point or basis of the malleolus to which they are attached. All recovered as easily and as perfectly as though there had been no displacement. Eight-twentieths were accompanied by evident laceration of the internal lateral ligaments, or separation of the compact layer of the point of the malleolus, two-twentieths were accompanied by fracture of the basis of this malleolus, or of the lower end of the tibia. All which having no other complications were cured almost as quickly and as perfectly as the preceding ones. Four-twentieths, or rather less remaining, were accompanied by luxation of the foot backwards as well as inwards; in all these there was laceration of the internal lateral ligaments, separation of the point or fracture of the basis of the malleolus of the same side. The displacement backwards has sometimes resisted the half-bent posture, as well as the means employed to bring the foot forwards, and to push the leg backwards; the displacement inwards has been always as easily corrected as though it had been alone.

Lastly, of two hundred and seven fractures, three only were complicated with simple luxation of the astragalus outwards, and of the foot inwards. The application of the apparatus to the outer side of the leg has cured them as readily as the displacements of the astragalus inwards. Almost all were accompanied

by extravasation of blood. The ecchymoses have all recovered with facility. The effusions of blood have also recovered without difficulty or danger, when the external air did not gain access to the cavity, containing them. They have caused few bad symptoms when this access has been the result of the spontaneous separation of sloughs. They have caused more serious ones whenever the openings have been preceded by inflammation and affections of the skin depending on it.

Fractures accompanied by lacerations of the skin have been to those which were not as one to seventeen. Of these lacerations, two-fifths were situated on the inner side of the articulation, and corresponded to the extremity of the upper fragment of the tibia, the projection of which had caused them; one-fifth only were placed on the outer side and lower part of the leg, corresponding to the extremity of the upper fragment of the fibula, the immobility of which had caused them. Two-fifths occurred in various parts, and were produced by the action of foreign bodies. The lower fragments of these fractures never caused laceration.

Fifteen individuals, or one-fourteenth, were attacked by inflammation. This always affected at the same time the skin and subjacent cellular tissue. Where it was confined to these parts, it most commonly terminated in resolution, sometimes in suppurations which were opened as they formed; this has prevented its extension, and the thinning and destruction of the skin. In some cases it penetrated to the centre of the fracture and to the articulation; it has then been most serious, and often complicated with symptoms apparently adynamic, which often proved fatal to the patients.

Seven individuals, or one-thirtieth, were affected with necrosis. Of these necroses four were of bones. In all, the thickening and ossification of the periosteum has supplied the deficiency of bone. The three other necroses affected tendons. This necrosis retarded the cure, but did not sensibly impede the motions of the part.

Eight patients, that is nearly one-twenty-sixth, were affected with nervous delirium. This delirium, which did not depend on inflammatory or other symptoms, lasted from two to five days. Three patients had each one relapse; a fourth had two. It yielded in all cases, without exception, to the injection into the rectum of some drops of the liquid laudanum of Sydenham. The duration of the treatment, or of the application of the apparatus, was, in simple fractures, and in most of those which were complicated with displacement inwards, outwards or backwards, with infiltration or effusion of blood; with laceration of the

lateral ligaments, separation of the point or basis of the internal malleolus, &c. &c. from twenty-five to thirty-five days. In some fractures, complicated with serious disorders of the internal and external parts, with splinters, and subsequently with inflammation, suppuration, &c., it was from forty to sixty days. In some multiplied fractures, complicated with numerous splinters, and necrosis of the tendons and bones, it varied from sixty to eighty, a hundred or more days. The period of convalescence was in general double that of the treatment, whatever might be the kind of fracture. In almost all cases, after the removal of the apparatus, the foot has appeared more or less carried inwards, that is into adduction. The action of the muscles has always sufficed to restore the foot to its natural situation in a few days, and the application of the apparatus on the outside, that is along the fibula, has produced the same result in a few hours. In all the patients cured the limb has preserved its shape, with the exception of two, in whom the heel remained a little elongated backwards, and the tibia a little projecting in front. All have perfectly regained the motions of the foot, with the exception of one, in whom this part remained anchylosed with the leg.

Lastly, of two hundred and seven patients treated in the manner explained in this Memoir, two hundred and two have recovered; five only have perished, three from circumstances dependent on the accident itself, two from complications independent of it; these however we will not separate from the three others; so that for one patient who died, forty-one recovered; a proportion which would be fortunate in the treatment of the most common fractures, and which must appear still more so if we consider the unfavourable, though too well founded, prognosis, which almost all authors have given of that of the lower end of the fibula. No amputation has been performed either primitively or consecutively.

ANALECTA.

1. *High Operation for the Stone, by M. Souberbielle.*
(Annales du Cercle Medicale. Vol. I. Part I. 1820.)

Rose Orfrenne, aged three years and nine months, began to suffer from her birth. Her pain was particularly great when she passed her urine; the severity of the symptoms was such as seriously to affect her constitution. At the age of fifteen months she was weaned; the pains, which she referred to the organ of the pubis, increased in severity. Every time that she felt the necessity of evacuating her bladder she bent her body forwards, and supporting herself on her hands or elbows, whilst the whole frame was in a state of agitation, passed her urine, and often at the same time fæces. At the end of December, 1819, her parents brought her to Paris to seek relief. They applied to M. Thierry, who introduced a sound, and felt a stone: this gentleman recommended them to Dr. Souberbielle, who, after having examined, considered the stone so large that he resolved on performing the high operation: besides, this method, so favourable to females, deserves the preference in almost all cases. He proceeded to the operation January 16th, in the presence of Professor Chaussier, M. Thierry, and many professional men, both French and foreigners. He extracted a stone of the size and form of an almond in its shell; passed a canula into the bladder, through the urethra, to ensure the evacuation of the bladder; and placed a linen tent in the wound which was covered with dry lint and a compress. The urine passed principally by the wound and the canula, which, in spite of every effort, was constantly obstructed by mucus, caused so much pain and irritation that it was withdrawn on the seventh day. The edges of the wound, from the irritation caused by the contact of the urine, sloughed. The canula was again introduced on February 2d, the whole of the urine in the mean time passing by the wound; at the same time a collection of mucous and saline matters, which had been deposited by the urine in its passage from the bladder, and which had become consistent though friable, was removed. The bladder was injected from the urethra for the purpose of expelling by the wound all the fragments. On the separation of the sloughs a considerable extent of surface was left exposed, and producing healthy granulations: the bladder was injected at every dressing, and the cure proceeded o rapidly, that on February 14th it was almost cicatrized, no urine having passed by it for five days. The child returned to her parents, and continues to enjoy good health. The wound was always dressed from the bottom, and no measures used to approximate the edges, and thus accelerate the cure. Experience has shewn us that these measures are injurious, as by hindering the exit of matter and urine they retard the cure.

2. *Phosphorescence of Wounds.*

It is known that light is emitted from organized bodies when putrefaction takes place, under certain circumstances: the same phenomenon sometimes occurs in wounds, and doubtless a greater number of instances would be recorded were they often dressed in the dark. M. Percy, who, during twenty-five years of wars, has had under his care more than a million wounded, has often been deprived of the advantage of light. It was thus that he observed in a young soldier the phosphorescence of a slight wound in the leg for more than fifteen days. In this case it might perhaps be attributed to the man's having applied compresses dipped in urine to the wound; but some time afterwards, at the siege of Manheim, a vivid light, a true *ignis fatuus* existed for more than six days over the wound of an officer, who had been dressed with compresses wetted with pure water only. M. Percy has since had frequent opportunities of observing similar facts.—(*Analyse des Travaux de l'Academie des Sciences de Paris, pour* 1819. *Par M. le Baron Cuvier, Sec. Perpet.*)

3. *Fatal Hemorrhage from the Internal Carotid Artery.*

Dr. Dumoustier, surgeon-major in the French army, witnessed the death of a soldier by hemorrhage from the internal carotid artery of the left side. This vessel was opened by the progress of an ulcer in the æsophagus, which penetrated the sides of this part of the alimentary canal. It had been produced by a small piece of a bone in some meat, which, during a short stay, caused ulceration in two points. The cure was rendered impossible by a constitutional venereal affection, not recognised during the lifetime of the patient. One of these ulcers had extended deeply, and reached the artery, which was found adhering to the side of the æsophagus, and pierced by a hole, a line in diameter.—(*Journal General de Medicine. Mars.* 1821.)

4. *Case of Hydatid in the Frontal Sinus.*

A young woman was admitted, in November, 1818, into the surgical hospital at Göttingen, with a tumour, of considerable size, over the right eye. In a hot day in 1801, she fell into the water, and soon afterwards an eruption broke out, which was probably the measles; but if so, it was irregular in its progress. After her recovery from this, and in the autumn of the same year, she fell with her right temple against the corner of a table, the blow produced by which caused a greenish mark; as this disappeared a hard tumour was soon discovered in the region of the frontal sinus, which, by degrees, extended towards the right temple, and at length included the whole right side of the frontal bone: it was free from pain: the right eye was forced by the increase of the tumour outwards and downwards, and vision was eventually lost.

At the time of her admission into the hospital the tumour extended as far as the coronal suture; the orbit and eyeball were pressed downwards, forwards, and laterally, so that the latter was on a level with the extremity of the nose: the eye was covered by the eye-lids, was of its natural form, but completely anaurotic. It could be moved a little towards the nose. In the region of the temple and over the eye the tumour yielded to the pressure of the finger, but rose again on remitting it; it was like " pressing the top of a tin box:" it was entirely free from pain, but strong pressure on the top of the nose caused uneasiness. That it was not connected with the brain was apparent from the circumstance, that throughout no disturbance of the functions of that organ were observed; the patient enjoyed in other respects the best health. If it had proceeded from an excrescence from the brain, both walls of the cranium would have been elevated, and the bone could not have been depressed in the places mentioned; therefore there could be no danger in opening the tumour. This was done in December, 1818, by Professor Langenbeck, in the following manner: At the spot on the side of the tumour, where the bone yielded, the integuments were divided by a crucial incision, and the external table of the os frontis was perforated by a trephine; into this opening the forceps were introduced, and it was enlarged by breaking out some portions of the external table, which was done without difficulty. After the sinus was opened, a clear viscid fluid escaped, and a white and shining bag appeared, which filled the whole cavity, and from an aperture, in which the fluid proceeded, the hydatid was extracted by means of the forceps. The space from the opening to the orbitar process of the os frontis measured three inches from the same point to the opposite sinus, and to the posterior table three and a half inches. The posterior table could be felt distinctly with the finger; the anterior was very spongy and thin; the cavity was filled with charpie. On examination of the hydatid its sides appeared thick, and at the basis almost cartilaginous; within there were several cells containing a yellowish fluid. After some days a copious discharge of thin matter took place, to repress which injections of Decoct. Cort. Salicis c Essentia Myrrhæ were employed; afterwards these were changed for injections of sublimate, but these were necessarily discontinued, as salivation threatened. The internal treatment was at first antiphlogistic. After the discharge was established bark was

administered. The tumour diminished to an insignificant size, and the patient was discharged.

In the beginning of the winter, 1819-20, she was again admitted into the hospital. The tumour was in the same state, and the discharge as copious as before. To diminish this two setons were drawn through the cavity, and during the employment of these the discharge became less copious, and the tumour decreased in size. —(*Langenbeck's Neue Bibloth. 2 Bandes, 3 St.*)

QUARTERLY LIST OF NEW PUBLICATIONS.

ANATOMY AND PHYSIOLOGY.

Chossat, C. M. D. Memoire sur l'Influence du Systeme Nerveux sur la Chaleur Animaux. 8vo.

Koreff. Ueber die Erscheinungen des Lebers und die Gesetze nach denen es sich in mansch. organismus offenbahrt. 8vo. Berlin.

Meissner, F. L. Ueber die Unfruchtbarkeit des Mannl. und Weibl. Geschlechts. 8vo. Leipzig.

BOTANY.

Icones. Selectæ Plantarum quas in Systemate Universali, ex herbariis Parisiensibus, præsertim ex Lessertiano, descripsit A. P. De Candolle. Vol. I. fol. Parisiis.

MEDICAL JURISPRUDENCE.

Capuron. La Medicine Legale relative à l'Art des Accouchements. 8vo. Paris.

Briand. Manuel de Medicine Legale. 8vo. Paris.

Orfila. Leçons de Medicine Legale, avec 22 Planches. 8vo. Paris.

MEDICINE AND SURGERY.

Hufeland. Traité de la Maladie Scrophuleuse; traduit de l'Allemand, par Bousquet; suivi d'un Memoire sur les Scrophules, et quelques Reflexions sur le Cancer; par le Baron Larrey. 8vo. Paris.

Morgagni. Recherches sur le Siege et les Causes des Maladies, tradnites du Latin, par M. M. Desormeaux et Destouet, Tom. I. et II. 8vo. Paris.

Alard. Du Siege et de la Nature des Maladies, ou nouvelles Considerations touchant la veritable Action du Systeme absorbant dans les Phénoménes de l'Economie Animale. 2 Tom. 8vo. Paris.

Parizet et Mazet. Observations sur la Fievre Jaune, faites a Cadiz, en 1819. 4to. 5 Planches coloriés. Paris.

Begin. Principes Generaux de Physiologie Pathologique, co-ordonnes d'apres la Doctrine de Broussais. 8vo. Paris.

Pougens. Dictionnaire de Medicine, Pratique et de Chirurgie, mis à portée des Gens du Monde. 4 tom. 8vo. Paris.

Brewer et Huet. Nouvelle Bibliotheque Germanique Medico-Chirurgicale. De mois en mois. 8vo. Paris.

Magendie. Journal de Physiologie Experimentale; par Trimestre. 8vo. Paris

Revue Medical, 1ere Livraison, 2 de Année. Paris.

Boyer. Traite des Maladies Chirurgicales. Tom. 7. 8vo. Paris.

Nouveau Dictionnaire de Medicine et Chirurgie. Tom. I. 8vo. Ditto.

Londe. Gymnastique Medicale. 8vo. Paris.

Bergeron. Manuel Pratique de Vaccine. 8vo. Paris.

Chomel. Des Fievres Pestilentielles. 8vo. Paris.

Morgagni, J. B. Editio nova, cura Chaussier et Adelon. Tom. IV. 8vo. Parisiis.

Brandeis, H. Medicinis ches Worterbuch oder Etymologische Erklarung der im Gebiete der Arzneykunde vorkommenden Worter. Tubingen.

Conradi, J. W. H. Einrichtung der Medicin. Klinik im Hospital zu Heidelberg,

nebst einigen Bemerkungen uber die darin behandelten Krankheiten. 8vo. Heidelberg.

Verhandlungen der Kaiserl Leopold Carolin. Akad, der Naturforscher, kerauseg, vom Pras. C. G. Nees v. Esenbeck. 1820.

Zeitchrifte fur Natur-und Heilkunde-Herausgegeben von den Professoren der Chirurgisch-Medicinischen Akademie in Dresden. Erster Bande. Dresden.

MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

Journal fur Geburtshulfe, Fraccenzimmerund Kinder-Krankheiten. E. v. Siebold. Dritten. Bandes. Zweits Stucke. Frankfurt am Main. 1821.

Geissen bei G. F. Heyer. Die anzeigen der Mechanischen Hulfen bei Entbindungen, nebst Beschrebung einiger in neuerer Zeit empfohlenen geburtschulflechen Operationen undeiner Geburtzange von F. A. Ritzen mil einem Kupfer. Frankfort. 1820.

Joh. C. G. Jorg. Aphorismen uber die Krankheiten des Uterus und der Ovarien, zur Wurdigung zweier vom H. H. Osiander in Leipzig unternommenen Operationem. Leipzig. 1820.

Additional List of Subscribers since the Publication of our last Number.

Transylvania University, State of Kentuchy, North America.
Chatham Medical Book Society.

Anderson, Dr. New York.
Arrowsmith, Jas. Esq. Manchester.
Benwell, Henry, Esq. Greenwich.
Belden, J. H. Esq. Bermuda.
Christie, Robert, Esq. E. I. C. S.
Croome, R. Esq. Banbury, Oxon.
Christison, Dr. Edinburgh.
Dunn, D. Esq. Holloway.
Dangerfield, G. Esq. Tewkesbury.
Dennett, — Bognor.
Evans, Herbert, Esq. St. Bartholomew's Hospital.
Freckleton, Geo. Esq. Manchester.
Francis, H. D. Esq. St. Bartholomew's Hospital.
Gordon, Dr. J. A. Finsbury-Square.
Gore, Richard, Esq. St. Bartholomew's Hospital.
Gilbert, Dr. Theodore, Bermuda.
Hull, Dr. Manchester.
Hunter, Dr. E. I. C. S.
Haviland, Dr. Cambridge.
Heynes, S. Esq. E. I. C. S.
Holmes, Alex. Esq. Bermuda.
Hutchins, C. H. Esq.
Jones, — Esq. Hounslow.

Ledsam, J. J. Esq. Birmingham.
Maclean, Dr. Charles.
Macgowan, Dr. Paris.
Mc. Whirter, Dr. Calcutta.
Mack, the Rev. Mr. J. Serampore.
Macilwain, Geo. Esq. Surgeon to the Finsbury Dispensary, Ely-Place.
Napper, J. Esq. Paris.
Scott, Dr. Russell-Square.
Salmon, F. Esq. St. Bartholomew's Hospital.
Stowe, Wm. Esq. Buckingham.
Shepherd, — Esq. St. Bartholomew's Hospital.
Stocker, T. Esq. Sidmouth, Devon.
Turner, — Esq. Manchester.
Troughton, N. Esq. Coventry.
Vade, J. K. Esq. Cornhill.
Wheeler, Lowe, Esq. St. Bartholomew's Hospital.
Windsor, John, Esq. Manchester.
Wells, C. D. Esq. Morpeth.
Willis, Dr. Cheltenham.
Wilmer, J. Esq. Derby Infirmary.

CONTENTS.—N° XI.

ART. I. *Leçons faisant partie du Cours de Médecine Légale de M. Orfila, Professeur de Médecine Légale à la Faculté de Médecine de Paris, Président des Jurys Médicaux, Médecin par quartier de S. M.* Paris, 1821. pp. 487. 22 planches.

THE acknowledged talents of M. Orfila, the utility and able execution of the works he has already given to the public, would in themselves be at all times a sufficient reason for our hailing with satisfaction the announcement of any publication to which his name was attached. In the present instance our favourable prepossessions were in no small degree increased, by the nature of the subject, which he had chosen for the exercise of his brilliant genius, as being one confessedly too much neglected in this country; and in which, more than in any other branch of medical science, was wanting a system which should arrange the knowledge we already possess, reject opinions erroneous and disgraceful to human nature, and bring to a level with other sciences, one of the most interesting and important among them. With such feelings we proceeded to the perusal of the Lectures on Legal Medicine, and experienced considerable disappointment on finding that they embraced but a very limited part of the subject, and that the author's attention had been almost exclusively confined to the consideration of this science, as connected with the subject of his former investigations. The work may, indeed, with most propriety, be considered as forming a supplement to that on general Toxicology—a supplement doubt-

less rendered necessary by the accumulation of new, and important facts in a period comparatively short.

The reason which M. Orfila assigns in his preface for the publication of this part of his course, is a wish to spare his auditors the trouble and difficulties of taking notes, particularly as this is rendered nearly impossible from the attention required to the numerous demonstrations and experiments with which it abounds. While we allow that this is a more than sufficient reason for the appearance of this production, we cannot but regret that it should be unaccompanied by the remaining part of the course, in which are comprehended subjects at least equally important, but to which, much less attention has been paid.

The work before us is composed of thirty-four lectures ; of which thirty-two are devoted to the subject of medical jurisprudence as connected with the administration of poison, and two to that of medical police as regards the adulteration of some articles of food in common use. The toxicological part of the book is divided into three sections, of which the first is composed of general preliminary notions on poisoning, considered in a medico-legal point of view ; the second treats of poisons individually ; and the third comprehends the generalities of the subject, and the precepts which are to serve as the basis for the formation of reports on this branch of legal medicine.

The preliminary notions on poisoning contain some remarks on the different degrees of intensity in the action of different poisons ; on the manner in which that action is modified by the state in which the poison is administered ; the part to which it is applied, and the kind of animal which forms the subject of observation ; on the absorption of poisons ; and on the comparative difficulty or facility of recognizing poisons, according as they exist in a gazeous, liquid, or solid state. M. Orfila believes that the absorption of certain poisons cannot be doubted, although there are some physiologists who call the fact in question, and explain by the action of the nerves the phenomena referred to the exercise of this function. He states, that though in general, when a poisonous substance is applied to the exterior of the body, its absorption is most marked in those parts which are best supplied with lymphatics and veins, yet that the contrary is observed in some cases.

The classification of poisons which M. Orfila has adopted in the present work, is the same with that which he had already employed ; and although confessedly imperfect, and in many respects objectionable, is perhaps the best of which the present state of science admits, and has at least this merit, that it is derived from the observation of their most obvious effects. He

divides them into—1. Irritating poisons ; 2. Narcotic poisons ; 3. Narcotico-acrid ; and 4. Septic, or putrefactive poisons. In the history of particular poisons, the subject to which the author confines himself, is the solution of the problem,—How is poisoning by such or such a substance to be recognized? For this purpose he points out in the consideration of each, the physical characters of the poisonous substance, the chemical measures required to point out its presence, whether it be in a pure state, or mixed, or combined with substances which disguise it ; the symptoms, and the lesions of structure which it produces ; and lastly, its mode of action on the animal economy.

The first class, or that of irritating poisons, remains nearly in the same state as when it was published in M. Orfila's System of Toxicology ; nor are we aware that any thing in the progress of science requires alteration in this subject. In describing the chemical means of detecting the presence of the various poisons, M. Orfila has considered the probability of the frequent occurrence of these substances in various degrees of impurity, and has accordingly pointed out the signs which characterize them in the different states in which they may exist.

Among the additions to the science of toxicology which this work presents, perhaps the most important, and especially as regards legal medicine, is the method which M. Orfila recommends for facilitating the discovery of poisons of various kinds when mixed with coloured fluids, whether alimentary or otherwise. In order to have a perfect idea of the value of the method in question, it is necessary to take into consideration the nature and extent of the difficulties which it is the means of obviating. The white oxyde of arsenic (a substance which perhaps more frequently than any other gives rise to the important investigations which we are considering), when dissolved in water, gives a green precipitate on the addition of the solution of the ammoniacal sulphate of copper. Let us suppose, that one ounce of the solution of arsenic be mixed with ten ounces of red wine, and we shall find that this mixture, on the addition of the ammoniacal sulphate of copper, instead of a green will present a precipitate of a blackish blue colour. If the same test be applied to a mixture of equal parts of solution of oxyde of arsenic and broth, no precipitate will be formed ; the liquor will only become of a dirty green colour. Again, the solution of arsenic in water forms with lime water a white precipitate, and with the solid nitrate of silver one of a yellow colour, which becomes black by exposure to light ; but if lime water be added to a mixture of equal parts of decoction of coffee and solution of arsenic, the precipitate which it furnishes is of a yellow colour,

and no change takes place if the nitrate of silver be added to milk, containing one seventh part of its volume of the solution of arsenic in water. Here then there is a source of great uncertainty, and probably of error; and the importance of the absence of these means of determining the existence of the poison in question may be estimated, when it is considered that of all the reagents employed for the purpose of discovering the oxide of arsenic in solution of water, none is more efficacious than the ammoniacal sulphate of copper: in fact it will discover the existence of this substance in a solution which only contains 1-120,000dth. part of its own weight. In these circumstances M. Orfila has availed himself of the well known property of destroying vegetable colours possessed by chlorine. A sufficient quantity of this substance, in a liquid and concentrated state, is added to the fluid suspected to contain arsenic; a reddish yellow matter is formed, which is allowed to subside, and the fluid being filtered, presents the same results on the application of the various reagents as the aqueous solution. In the case of corrosive sublimate under similar circumstances, as regards its being mixed with coloured fluids, M. Orfila employs a process of a different nature. If twelve grains of corrosive sublimate, dissolved in water, be mixed with six ounces of red wine, this mixture gives a black precipitate with potash, and one of a green colour with ammonia, instead of a reddish yellow with the first, and a white one with the second substance, when added to the aqueous solution of sublimate. The measure which M. Orfila here adopts is founded on the greater affinity which exists between the sublimate and sulphuric ether, than between the former and water. The coloured solution is introduced into a phial, and two or three drams of sulphuric ether are poured over it. The phial is then closed, and its contents slowly agitated for ten or twelve minutes, so as to bring the ether in contact with every part of the solution. The ether abstracts the greater part of the sublimate from the water, and the liquid when no longer agitated separates into two strata, of which the upper is composed of ether, containing the sublimate in a state of solution. The whole is then to be poured into a funnel, the lower opening of which is closed by the finger; after some moments, when the fluid in the funnel is observed to have again separated into two strata, the lower or aqueous one is to be allowed to escape, by partially removing the finger, which closes the opening of the vessel. The ethereal solution of sublimate is then to be poured into a vessel which presents a considerable extent of surface; the evaporation of the ether is thus facilitated, and the sublimate remains in a pure and solid state. It is to be observed, that the two fluids should not be

agitated together too briskly, nor during too long a period; for in this case the ether would be altogether absorbed by the water, and these two fluids would not separate into the two strata, on which the success of the operation depends. This process is equally applicable to the case of corrosive sublimate, dissolved in a quantity of water, so large that its existence is not indicated by any of the usual tests; so much so, that M. Orfila states that he has in this way discovered one grain dissolved in six ounces of water.

In giving the history of poisoning by corrosive sublimate, M. Orfila notices a case of considerable importance, and of such a nature as to be far from improbable or impossible; whilst at the same time an error in judgment, or a want of information as to circumstances, might be attended by the most unfortunate consequences. Let us suppose then, that an individual, who has been some time ill, and who is habitually constipated, takes as a purgative some grains of calomel (proto-chloride of mercury); he dies within three or four hours afterwards; it is suspected that he has been poisoned. A practitioner is called upon to examine the body; he finds the alimentary canal inflamed; he analyses the fluids it contains, but finds nothing which explains the cause of death. He examines the solids in the manner we have advised (by heating them with pure potash), and at the end of the experiment he discovers the presence of mercury in a metallic state; every thing induces him to believe that the individual has been poisoned. Such an opinion would, however, be erroneous in the case we are considering; for the redness of the alimentary canal depends on a chronic phlegmasia, with which the patient had been long affected, and the metallic mercury is derived from the small dose of calomel which he had taken, and which was certainly insufficient to produce death by poisoning. M. Orfila indicates the following considerations as sufficient to guard against the occurrence of mistakes of this nature. 1st. It must be remembered, that calomel which has been introduced into the alimentary canal may be discovered there after death; but it is then most commonly applied upon the mucous membranes, in the form of a whitish powder, and may be removed by scraping these parts, with which it has not entered into combination. It is besides insoluble in water, and when it is placed in contact with lime water at the ordinary temperature, it becomes black, from the oxyde of mercury which is exposed: and it preserves all its physical properties. If by chance it should be intimately mixed with the solid alimentary matters contained in the digestive canal, it would suffice to diffuse these matters in water; the calomel then, from its great specific gravity, would

immediately reach the bottom of the vessel, while the other substances would be much longer in precipitating. 2d. The calomel which results from the decomposition of corrosive sublimate, by vegetable or animal substances, and the presence of which warrants us in pronouncing that there has been poisoning, is never applied in the form of powder to the membranes of the alimentary canal ; it never presents itself with its ordinary physical properties, because it is intimately combined with the substances, which have been the cause of its formation, by the decomposition of the corrosive sublimate which they have effected ; lastly, if lime water be poured upon the substances thus combined with calomel, no change of colour is to be observed.   Independently of these results, which are immediately furnished by experiment, the physician may have it in his power to ascertain that the individual had taken calomel ; the knowledge of this fact must necessarily tend to rectify the erroneous opinion he might at first have formed.

The opinion of M. Orfila, as to the action of the various preparations of arsenic on the animal economy, and the mode in which they produce death, seems to be the same as that which Mr. Brodie has published in the Philosophical Transactions.   He says, " That when we examine the experiments and observations relative to this subject, we must conclude that it (the oxide of arsenic, the action of the other preparations only varying in their degree of intensity) is very poisonous to all organized beings ; that its action is more marked when dissolved in water than when in a solid state ; that the symptoms of poisoning occur, whether it be introduced into the alimentary canal, into the veins, into the serous cavities, or the vagina, or whether it be placed in contact with the subcutaneous cellular tissue ; that it acts with the same energy, when it is applied to the subcutaneous cellular tissue of the back as when it is placed in contact with that in the inner part of the thigh, which is not the case with corrosive sublimate ; that it is absorbed, and that its action is more energetic in proportion as the tissue on which it is applied communicates more directly with the circulating system ; that it destroys the contractile power of the heart, and often causes inflammation of its internal membrane ; that independently of the affection of this organ, it acts upon the alimentary canal ; in fact, symptoms are constantly observed, which indicate a lesion of the stomach, and it is not uncommon to find this organ inflamed after death, even when the poison has been applied to the subcutaneous cellular tissue, or injected into the the thoracic or abdominal cavities ; that, nevertheless, in the greater number of cases, death cannot be the result of the local

irritation which it determines, this being most frequently too slight to destroy life in a period of time so short as that which arsenic requires to produce its fatal effects; lastly, that the putrefaction of the bodies of individuals, who have perished by poisoning from arsenic, is not retarded, as has been asserted, unless circumstances unconnected with the poisoning oppose themselves to the developement of the phenomena which characterize this state."—pp. 97-8.

Of all the circumstances under which the irritating poisons may be applied, there is none which is more calculated to excite sentiments of indignation and horror than the case which, though it might at first appear imaginary and improbable, has, notwithstanding, actually occurred; we mean that, where substances of this description have been introduced into the large intestines at a period of time more or less distant from the death of the individual, with the intention of imputing the perpetration of a crime of the darkest hue to a person or persons in reality innocent. In such a case it is but too probable, that want of proper information, or hasty inferences from appearances supposed to be conclusive, aided perhaps by the operation of an involuntary prejudice, might render the practitioner, on whose determination the truth of an accusation depended, an unconscious accomplice in the perpetration of an action he abhorred. Nor can it be supposed that in such circumstances the existence of the best intentions would be a sufficient apology to the world (we say nothing of his own feelings) for the mischievous effects of what might be justly termed criminal ignorance or want of attention. One circumstance which forms a striking distinction between the effects of an irritating poison administered during the life-time and after the death of an individual is, that in the latter case the appearances which result from its application terminate by a regularly defined line drawn between the parts with which the poison has been placed in immediate contact, and others in their vicinity: so that on one side we shall find the mucous membrane more or less altered in texture, while within the space of a few lines from the same point, no change from the natural and healthy state can be discovered. The effects of irritating poisons administered in this manner, are for the most part referable to their chemical agency; thus if sulphuric acid be applied, the mucous membrane is rendered pulpy and flocculent, the muscular coat is white as is the serous membrane; this last is thickened, and covered with vessels containing blood in a black, and indurated state. In this instance there is no redness. If nitric acid be introduced the mucous membrane is destroyed, becomes pulpy, and the

intestine is ultimately reduced to the state of a fatty paste of a fine yellow colour ; but no trace is to be discovered of redness or inflammation.   In the case of corrosive sublimate, the mucous membrane is rendered rugous and granular, and of a white colour : it presents here and there folds of a clear rose colour, which, from their disposition, present the appearance of venous ramifications : the muscular and serous coats are white and thickened ; the vessels of the meso-rectum are sensibly injected, but the portion of the intestine, which has not been in contact with the poison, remains in its natural state. When the white oxyde of arsenic has been injected into the rectum of an individual, who has just expired, and allowed to remain there for twenty-four hours, the appearances, which present themselves on examination might, at first sight, seem to be of an ambiguous nature ; the mucous membrane, which has been in contact with the poison, is of a tolerably bright red colour, and presents one or more spots of a blackish red colour, which are in reality ecchymoses : the other tunics are in the natural state, as are also the portions of intestine, which have not been in contact with the oxyde.   Hence it is easy to distinguish whether this poison has been applied to the large intestines before or after death ; in fact, in the latter case, it is found at a short distance from the anus, and if the rectum is inflamed or presents ecchymoses, it is only in those parts which have been touched by the oxyde ; so that there is a line of demarcation very decidedly marked between these parts and those immediately above them. On the contrary, if the inflammation were the result of the injection of the oxyde of arsenic into the rectum during life, it would extend much beyond the parts which the oxyde had touched, and the redness of the intestine would gradually become less intense, in proportion as it approached nearer to the small intestines.

Previously to the consideration of the effects of opium, M. Orfila has described the properties and action on the animal economy, of the two substances lately discovered in that narcotic, and to which its injurious qualities are supposed to be owing ; these are, morphine of an alkaline nature, and the substance distinguished by the name of salt, or crystallizable principle of Derosne, narcotine, &c.   The conclusions which M. Orfila has drawn from his experiments and observations are highly interesting, and in many respects new. The results of his experiments do not coincide with those of M. Majendie, although he is unable to state to what circumstance this difference is to be attributed.   He states, that " the crystallizable principle which he employed was prepared by M. Derosne ; the

aqueous extract of opium deprived of this principle by ether, and which produces the same effect as the common extract, was supplied by M. Robiquet; and, lastly, he has so varied and multiplied his experiments, that he does not hesitate to support the conclusions he has himself formed."—p. 209.

It may not be uninteresting to transcribe the history of these two substances, in many respects so interesting and important. It is shewn by experiments made on dogs, and some observations collected on the human subject, first, that pure morphine in a solid state may be introduced into the stomach of the weakest dogs in the dose of ten or twelve grains, without giving rise to any sensible phenomena; this depends on the great difficulty with which it is dissolved by the juices of the stomach : at the same time, if this viscus should contain a sufficiently large quantity of disengaged acid, the morphine would be dissolved, and would cause all the symptoms of poisoning. 2. That it has no effect when applied in a solid state to the subcutaneous cellular tissue of the inner part of the thigh in dogs. 3. That the salts of morphine produce on man and other animals the same effects as the watery extract of opium ; the sulphate and muriate act with less energy than the acetate, which probably depends on the more complete neutralization of the poisonous properties by the sulphuric and muriatic acids, than by the acetic. 4. That the action of twelve grains of morphine dissolved in acetic acid, is more powerful than that of the same dose of the watery extract of opium ; the cause is, that this quantity of extract contains much less than twelve grains of morphine. But it is extremely probable, that if twelve grains of morphine were dissolved in the acids which form a part of the watery extract of opium, the effects obtained would be much more intense than those from the same dose of this alcali dissolved in acetic acid, because the acids contained in opium probably neutralize the morphine, less completely than the acetic acid ; and in this case the alcali being more free, will act with a greater degree of force. 5. That the solution of morphine in oil of olives exercises a much more powerful influence over the animal economy, than the watery extract of opium ; so that a solution of six grains of morphine in oil, is as powerful as twelve grains of extract. 6. That it is probable, from some observations made on the human subject, that morphine dissolved in alcohol, acts with still greater intensity than the oily solution, but that this fact cannot be determined on dogs, as alcohol when so much diluted as to produce no effect on these animals, dissolves so small a quantity of morphine, that it is impossible to produce the least effect upon them. 7. That the soluble preparations of this

alcali are absorbed; hence their action is much more powerful when injected into the veins, than when applied to the cellular tissue, or the alimentary canal. 8. That they act on the animal economy in the same manner as the watery extract of opium.

The experiments which M. Orfila has made upon dogs with the principle of Derosne, have led him to the following conclusions :—1. That ten or twelve grains of this substance may be applied to the cellular tissue at the inner part of the thigh, without occasioning the slightest accidents. 2. That ten or twelve grains dissolved in six or eight drams of olive oil, and introduced into the stomach, produce the following effects :—Fifteen or eighteen hours after the administration, the animals experience nausea, which would in a short time be followed by vomiting, if the escape of the contents of the stomach were not prevented ; they appear weak, and as though in a state of stupor ; the hinder extremities are gradually bent ; respiration is a little accelerated ; in a short time they raise themselves to go forwards, and appear more lively. This state continues for several hours, until at length the weakness is so considerable as to force the animals to lie on their belly, or their side, in which attitude they die at the end of some hours. Death is preceded by slight convulsive motions of the limbs ; it occurs at the end of the second, third, or fourth day ; in other respects there are observed in this case neither vertigo, nor paralysis of the extremities, nor plaintive cries, nor strong convulsive shocks, as is the case with morphine and opium : the organs of sense execute their functions freely. On opening the body, no marked alteration is discoverable in the intestinal canal. 3. A grain of the same principle dissolved in oil, and injected into the jugular vein, produces a state of stupor similar to that which we have described, and may occasion death in twenty-four hours. 4. Twelve grains dissolved in two drams of strong vinegar may be injected into the cellular tissue of the inner part of the thigh, without producing any particular inconvenience, whilst the same quantity of acetate of morphine, applied to the same tissue, gives rise to all the symptoms of poisoning.

From the consideration of the properties and effects of these two substances, in their independent state, M. Orfila proceeds to the investigation of the action of opium on the animal economy, and the determination of the share which each of these important principles has in the poisonous effect of that drug. After giving a description of the symptoms of poisoning by opium, which are too well known to render it necessary to detail them here, M. Orfila states, " 1. That opium introduced into the stomach of dogs, in the quantity of two or three drams,

causes the death of the strongest dogs, in the space of twenty or thirty hours. 2. That the aqueous extract of opium prepared with cold water, and which has been but once evaporated, is much more active than opium in substance, or than extracts prepared by any other process ; in fact, when introduced into the stomach, in the dose of two or three drams, it causes the death of dogs in three or four hours. 3. It acts with more energy when injected into the rectum, unless it be suddenly expelled. 4. Its action is still more powerful when it is applied upon the cellular tissue, and above all when it is introduced into the veins, into the cavity of the pleura, or peritonæum. 5. Injected into the carotid it produces death with still greater rapidity. 6. A considerable quantity is required to kill animals when it is introduced into the bladder. 7. Its application upon the brain is not mortal. 8. The extract of opium, deprived of morphine and of the principle of Derosne, may be administered in large doses without producing the symptoms of poisoning ; and if it sometimes retains a slight action, this depends on the imperfect separation of these substances. 9. The extract of opium, deprived of the principle of Derosne only, by means of ether, as M. Robiquet has pointed out, retains all its poisonous qualities, acts with the same energy, and appears even more stimulant than that which still retains this principle. 10. The distilled water of opium, strongly impregnated with the principle which becomes volatile, may cause vertigo, sleep, and even death, if taken in a large dose. 11. The marc of opium, or opium exhausted by water, containing much of the principle of Derosne and morphine, when given in substance to the extent of two drams, occasions symptoms similar to those produced by the principle of Derosne ; nevertheless the animals recover at the end of some days. 12. Two drams of the same marc, left for ten hours in a mixture of two ounces of water and two of common vinegar, and then introduced into the stomach, cause the death of dogs in thirty or forty hours, after having given rise to symptoms similar to those produced by the salt of Derosne ; which may be readily explained by the rapidity with which diluted vinegar dissolves the salt of Derosne and the morphine, which form a part of the marc. This result accords admirably with a fact which we had established in our Treatise on Toxicology, namely, that opium acts with more energy when it is administered in vinegar and water, than when it is simply mixed with water ; in fact, water does not dissolve the active principles of the marc, whilst the vinegar and water takes up all that the water alone could have absorbed, and in addition, the principle of Derosne and the morphine which remain

in the marc. 13. From what precedes, and from what has been said of morphine and the principle of Derosne, we think that we may establish, A, that opium owes its poisonous qualities to a salt of morphine and to the principle of Derosne ; B, that these two compounds act in a different manner, which we have described in their history ; C, that the action of opium results from the combined action of the two compounds ; D, that the poisonous effects of opium are to be particularly ascribed to the salt of morphine, as the extract, deprived of the principle of Derosne, but containing the salt of which we speak, kills animals in the same space of time as the common extract ; E, that the principle of Derosne cannot be considered as the exciting principle of opium, whilst morphine should be the narcotic one, as M. Robiquet has announced from the experiments of M. Majendie. * 14. Opium does not destroy the contractility of muscles with which it is in contact. It acts on the brain after having been absorbed and carried into the current of circulation. 15. Its deleterious effects do not depend upon its action on the nervous extremities of the stomach, for animals submitted to the influence of opium, in whom the par vagum has been divided on each side, die in the same space of time as if the section had not been performed. 16. Opium does not act on the animal economy in the same way as alcoholic liquors."—pp. 206-9.

M. Orfila is of opinion that the effects of the digitalis purpurea on the organs of circulation, vary according to the dispositions of individuals ; in fact, sometimes the pulsations of the heart are diminished in frequency, at others accelerated, intermittent, &c. ; in other cases it is impossible to observe the least change in the performance of the circulation. The deleterious effects of this substance depend on its absorption, and on its action upon the brain, where it causes a kind of stupor ; independently of this action it inflames the structures with which it is placed in contact. The resinous extract introduced into the stomach, or applied to the subcutaneous cellular tissue, seems to act particularly on the heart or blood ; at least this fluid is found coagulated when the body is opened immediately after death. M. Orfila likewise quotes the opinion of M. Gerard, a distinguished physician of Beauvais, published in an inaugural dissertation, supported at the school of Paris in 1819. This gentleman thinks that digitalis is a powerful sedative of the heart and nervous system, provided it be placed in a healthy stomach ; for if this organ is affected with an acute or chronic

---

* See le premier Bulletin de la Societé Medicale d'Emulation.

phlegmasia, digitalis instead of retarding the circulation, will produce the opposite effects. This opinion, if its correctness should be confirmed by experience, agrees with a fact which we have often noticed, that in acute inflammatory diseases, or in those which are attended with increased action in the system, little is to be expected from the administration of this remedy, although its good effects may be experienced in the same cases when the employment of other measures, or the continuance of disease, have brought the system below its ordinary standard. We consider that much of the uncertainty in its effects, so often complained of, arises from inattention to this circumstance; and it is worthy of notice, that Dr. Withering, to whom its extended use in this country is chiefly owing, has mentioned the fact, as far as regards ascites.

Under the head of the effects of decomposed animal matters, M. Orfila has given some extracts from a work published in German by Dr. Kerner, physician at Weinsberg,* which is interesting from its novelty, and its relation to legal medicine. Several persons have experienced serious accidents, sometimes followed by death, from having eaten sausages which had been exposed to the action of smoke immediately after they had been made, and left in that condition for some months. The accidents in question have appeared so often, that Dr. Kerner does not hesitate to compare the ravages of this poison to those from the venom of serpents in tropical countries. The white sausages have appeared more active than the black, and the deleterious effects have appeared proportioned to the quantity employed.

The symptoms of poisoning commence commonly twenty-four hours after the ingestion of the aliment; rarely sooner, and sometimes later. A severe burning pain is then felt in the epigastrium, and vomiting of sanguineous matter occurs from time to time; the eyes soon become fixed, the lids immoveable, the pupils are dilated, and remain insensible to the action of light; the patient sees double; the voice is affected; and there is often aphonia, more or less complete; respiration is impeded; the beating of the heart cannot be felt; there is frequent syncope, the pulse is weaker than natural; the veins of the neck are dilated and prominent; deglutition is extremely difficult; fluids fall into the stomach as into an empty vessel; solid food remains in the œsophagus; all secretion seems suspended;

---

* Nouvelles Observations sur les empoissonnemens Mortels qui arrivent si souvent dans le Wirtemberg, par l'usage des boudins fumés; par le Dr. Kerner. Tubingue, 1820. 12mo.

there is obstinate constipation, or the excreted matters are hard and dry, earthy, and not tinged with bile; the intellectual faculties remain perfect; in some cases the patient becomes irascible; rarely is there insomnia; the appetite often remains; the thirst is great, the integuments insensible; the patient scarcely perceives the impressions of heat and cold; the palm of the hand is hard and coriaceous, the skin in general is cold and dry; it is impossible to restore transpiration; the urine is copious, its excretion difficult; the motions are slow from the syncope, which threaten the patient on the slightest effort, but there is no fatigue in the muscles of the back or loins. When death follows, it is at the end of from three to eight days; respiration becomes impeded, the voice is lost, the pulse sinks and life ceases, sometimes after slight convulsive motions, the patient having retained his faculties to the last. In case of recovery, convalescence is very long; a sort of exfoliation often occurs from the mucous membranes. The patient remains long subject to syncope; the beating of the heart does not return till a late period. The symptoms vary in different cases, and some are occasionally observed of which we have not spoken, as diarrhœa, hydrophobia, delirium, vertigo, atrophy of the testes.

On opening the bodies, the muscles are found contracted, the limbs stiff and inflexible, the belly hard and tense; there are often traces of inflammation in the œsophagus and pharynx, sometimes only on the outer surface, and lower part of the former; one or more inflammatory or gangrenous patches, sometimes as large as a hand, occupy the inner surface of the cardiac part of the stomach; sometimes the inner membrane of this viscus is easily detached. The intestines are inflamed, or even gangrenous, in various places; the liver in most cases healthy, or filled with black blood; the gall-bladder distended, sometimes inflamed, and then filled with a bloody fluid; the spleen, pancreas, and kidneys healthy, although they were manifestly inflamed in two of these cases. The bladder full or empty, healthy or inflamed; the trachea often inflamed, and filled with bloody mucus; the lungs covered with black spots, or hepatized; the heart flaccid and collapsed, its cavities sometimes inflamed; the aorta in one case was very red, and corrugated on its surface. The author says, that he has observed that the bodies of these individuals give out no smell, even from the internal cavities.

Dr. Kerner thinks, that the poison contained in the sausages acts particularly by paralysing the whole system of ganglionic nerves, and the cerebral nerves which are not exclusively destined for the organs of sense. According to him, the brain, the medulla spinalis, and the nerves which belong to it, take no

share in this lesion. He considers the local inflammations as the consequence of this injury of the nervous system ; and he remarks the fact, that in a case of this kind the inflammation was propagated along the œsophagus, not on its inner surface, which was perfectly healthy, but on the outer, in the course of the nerves of the eighth pair.

But what are we to consider as the poisonous principle contained in these sausages ? Dr. Kerner assures us, that it is at present impossible to discover in them any poisonous substance, mineral or vegetable ; he rejects the opinion of those who have supposed that the principle might be the prussic acid, and he thinks that the poisoning ought to be attributed to a commencement of putrid decomposition experienced by the sausages during the period that they are left exposed to the action of the smoke. His reasons for the adoption of this mode of considering the subject are, 1. That the accidents are most frequent in the month of April, and after the sausages have been frozen and thawed several times successively, than which nothing is more likely to cause putrefaction of the animal matter. 2. The sausages which have produced bad effects had a putrid taste and smell; in them were remarked fatty masses, soft, and more or less similar to adipocire (gras des cadavres). 3. There is much analogy between the phenomena observed, and those dependent on putrid exhalations.

M. Cadet de Gassicourt, in giving an account of the labours of Dr. Kerner, in the Journal de Pharmacie, announces that he has been sometimes called upon to analyze meat which has caused symptoms of poisoning, and which had been bought from pork-butchers in Paris, and that he has been unable to discover the slightest trace of mineral poison either in the meat itself or in the vessels in which it had been prepared. M. Orfila has likewise been twice called upon by the authorities in cases of this description, and the results he obtained have been similar to those of M. Cadet de Gassicourt. He is of opinion, that the cause of the accidents observed in Paris is not the same as that which has produced the effects described by Dr. Kerner, for this reason, that the meat he has analyzed far from being putrid, was in a state of perfect preservation.

The diseases which simulate acute poisoning most closely, and which without due attention might be confounded with it, are cholera morbus, an irritation in the alimentary canal, giving rise to the perforation of the stomach, acute gastritis, ileus, peritonitis, hæmatemesis, &c. In connection with this subject M. Orfila criticizes, and with great justness, some observations published by M. Harmand de Montgarny in an inaugural dis-

sertation. This gentleman assumes, that preceding writers on legal medicine, consider acute poisoning as a violent phlegmasia of the alimentary canal, produced by a poisonous substance, and that the diseases from which it is desirable to distinguish this state, being themselves irritations, more or less intense, of the alimentary canal, but not arising from the action of poisons, it is absurd to suppose that we should be able, from the consideration of the symptoms, to distinguish the nature of the cause which produces the disease.

In reply to these remarks M. Orfila says, that acute poisoning is by no means regarded by authors as a violent phlegmasia of the intestinal canal; for it is expressly said by some of them, that narcotic and septic poisons produce no irritation in this part, and that in most cases the symptoms produced by narcotico-acrid poisons are rather the result of their action on the nervous system than on the canal in question. Neither are the diseases which it is wished to distinguish from poisoning always phlegmasiæ of the alimentary canal; among them are arachnitis, peritonitis, nervous ileus, hæmatemesis, &c. Nor is it the object of authors to point out in a positive manner, from the symptoms alone, whether a disease be owing to a poison or to any other cause. In our author's Treatise on Toxicology it is expressly said, that the symptoms and changes of structure are to be considered as accessory proofs of poisoning. But we are not to reject any means of throwing light upon an obscure question, although these means be not alone sufficient to resolve it, and what use could we make of the symptoms and changes of structure, unless we endeavour to distinguish between those really caused by poisonous substances, and those which characterize the disease in question?

We are also presented with some extracts from an inaugural dissertation of M. Laisné, before the Faculty of Medicine of Paris, May, 1819, entitled, " Medico-legal Considerations on spontaneous Erosions and Perforations of the Stomach," containing an exposition of the doctrine of M. Chaussier on this subject. The causes which produce erosion of this organ are of two kinds: first, the destruction of a schirrhous tumour, the progress of a cancerous ulcer; second, a morbid action of erosion, of ulceration which has commenced spontaneously at some point of the mucous lining of the stomach. The perforations of the first kind are not rare, but cannot easily be confounded with those which are the result of a caustic poison. Those of the second kind may be divided into acute and chronic; the first sometimes occurring in a very short space of time. The following are the characters given by M. Chaussier: " The

ulcerations vary in size, shape, and place; they occur particularly at the basis of the stomach, and the parts corresponding to the spleen and diaphragm. The contents of the organ are then sometimes effused into the abdomen or the thorax if the diaphragm be perforated, but most commonly there is no effusion, from the adhesion of the parts to those in the vicinity. If the adhesions be broken, a viscous, unctuous liquor, not fœtid, flows out; it has sometimes the odour of musk, is always brownish, and mixed with blackish flocculi, as though fine charcoal were added to a mucous serum. The edges are soft, fringed sometimes with a blackish line more or less marked. Elsewhere the stomach retains its ordinary shape and consistence ; it presents no appearance of thickening or inflammation ; the capillaries of its mucous membrane appear, however, more developed, particularly in the vicinity of the perforation ; this last sometimes forms in a few hours in people in health; most frequently after some days illness, and when no cause of external violence or poisoning can be suspected."

When the perforation is the result of a caustic, irritating poison, its edges are of the same thickness as the organ ; sometimes they are hard and callous ; in the spontaneous perforation the edges are thin, and formed only by the peritoneal membrane, the two other coats of the stomach being more extensively destroyed than the serous one. In this case too the opening is not so irregular as in that which results from the action of a corrosive substance. The circumference of perforations caused by nitric acid is yellow, from the chemical action of this substance. In the case of strong sulphuric acid it is black. Almost always when the perforation is the effect of poison, the parts not perforated are more or less inflamed, while traces of the same affection are found in the mouth, the pharynx, and the intestinal canal ; on the other hand, for the most part in the case of spontaneous perforation, the unperforated parts present no appearance of inflammation. This last character is not, however, constant; for as on the one hand, perforations from poison are sometimes, though rarely, unattended by inflammation of the unperforated parts of the intestinal canal, so on the other, spontaneous perforations may be observed in which there is inflammation of the stomach and intestines.

It is to be remembered, that though circumstances in these cases may render the occurrence of poisoning probable, yet that the discovery of the poison can alone justify us in answering positively in the affirmative, in particular, as those poisons which are capable of perforating the stomach almost all belong to the

mineral kingdom, and may consequently be discovered by chemical tests.

Under the head of aliments, considered with relation to medical police, we find a list of adulterations which hardly suffers by a comparison with that published by Mr. Accum, with the chemical measures necessary for the detection of these impositions. It may, perhaps, be considered by some as an alleviation of our own misfortunes, to find that at least we are not in a worse condition than our neighbours, though doubtless it must be a source of admiration, that in spite of all these evils we should continue to live and prosper.

A part, not the least valuable of M. Orfila's work, are twenty-two plates, well executed and coloured, of which twenty represent various indigenous poisonous plants, and the remaining two, some of the venomous reptiles and insects of Europe. It is but justice to say that the whole of the work is admirably arranged, well executed, and an additional proof of the abilities of the author. We trust that no long period will elapse before he completes the task he has so happily commenced, and for which his habits of investigation and cautious philosophizing so well qualify him.

———————

ART. II. *Collezione d' Osservazioni e Riflessioni di Chirurgia di Guiseppe Flajani, Dottore in Medicina e Chirurgia, Socio del Accademia delle Scienze di Siena, Socio Corrispondente dell' Accademia Medico-Chirurgica di Vienna, dell' Academia di Manheim, della Società dell' Arte Ostetrica di Gottinga, &c., Premario Professore di Chirurgia, e' Notomia, Litotomo e Profetto del Museo Anatomico nell' Arcispedale di Santo Spirito.* Tomi 4. Roma, 1798, 1800, 1802, 1803.

WE resume the analysis of these volumes from the point at which we were obliged to interrupt it in our last number. We pass over some observations on the nature and treatment of varices, which begin the third volume, but present nothing that is new or very interesting. The next subject is that of penetrating wounds of the abdomen, and of the viscera, which it contains. A very considerable number of these cases is dispersed throughout the work, a fact which is readily explained by a preliminary observation from the author, " that wounds of the abdomen, particularly those resulting from the

knife, are very frequent among the lower orders of this country, this instrument being in common use, for the purpose of wounding their adversaries in frays." Vol. 3. p. 35. The histories of the cases bear testimony to the truth of this statement, as almost all received their wounds from a " rival" or an " enemy" in stooping or falling. The first volume contains four cases, which are recorded as instances of wounds of the stomach ; but of these, two only presented the symptoms which might warrant this supposition, and in one only was the positive existence of this lesion shewn by dissection, the other having recovered. From the remarks on wounds of the abdomen we extract the following on the employment of sutures in this situation. " Sutures, by many thought absolutely necessary in extensive penetrating wounds of this cavity, are for the most part not only useless, but injurious ; and if we refer to facts and to daily experience, we shall find that union is more readily effected by adhesive plaister, with the employment of proper position and bandage. During a long course of practice in this hospital I have had occasion to treat numerous penetrating wounds, of considerable extent in the first instance, or rendered so from the necessity of dilatation, to procure the return of protruded parts, some being even accompanied by the total division of the rectus muscle ; yet I have always been content with the use of adhesive plaister and proper position, and with these simple measures the greater part have united and healed, whilst in those who have perished, I have always found lesion of the contained viscera, or extravasation of blood. In two cases (the only ones) in which I performed gastroraphe, besides the suffering which it caused in the first instance, inflammation, pain, and swelling of the edges of the wound took place, which symptoms not yielding to general or local remedies, I was compelled to cut the suture and abandon the wounds to nature. One healed after a long suppuration, the other patient died from the effects of injury of the spleen and omentum." Vol. 4. p. 52.

The author coincides with the general opinion of surgeons in recommending the dilatation of the wound, in preference to the exertion of force on protruded portions of intestine, &c.

Observation 16, Vol. 4, is a case of wound of the diaphragm without injury of any other important part. It is interesting from the nature and clear account of the symptoms.

" Soon after midnight Sante Cogrossi was wounded by some robbers on the right side of the chest. He fell to the ground, and was brought to the hospital in the morning. He arrived whilst I was visiting the patients, and as soon as he was placed in bed I found him cold, cadaverous, with a small frequent pulse.

He complained of intense pain in the right hypochondrium, and lay on that side with his body bent. The wound was about half an inch long, and near to the sternum, between the second and third true ribs. He had lost but little blood, and was of a robust habit. A constant desire to cough disturbed him much, and increased his pain. At the end of two hours a kind of hiccup took place; towards evening he became feverish, with a dry tongue, and strong convulsions on the right side of the neck. He was now bled, and this was repeated in the night, from the occurrence of delirium. In the morning he was less feverish, but the other symptoms continued as before. In the evening he was bled a third time from the increase of fever: at night the delirium was still greater, and accompanied by constant hiccup: he several times attempted to tear the skin of the hypochondrium of the right side, from the pain he suffered there in the act of inspiration. On the morning of the fourth day I found him convulsed in every part of the body, insensible and delirious, with risus sardonicus, from the constant convulsion of the lips and lower jaw. He continued in this state until the beginning of the fifth day, when he died.

" The examination of the body shewed that the wound had not only penetrated the cavity of the thorax, but also extended to the diaphragm, which was wounded in its tendinous part."—p. 65.

In some observations on ascites, and the operation of paracentesis abdominis, it is recommended that the trocar should be introduced midway between the umbilicus and spine of the ilium, when no contra-indication exists. It is unnecessary to mention the reasons for the preference given by the surgeons of this country and of France, for the performance of this operation in the linea alba, between the umbilicus and pubes. The author himself, a few pages afterwards, mentions hemorrhage from the epigastric artery, as one of the accidents which may follow the first of these two methods. He seems, however, to estimate its danger lightly, as, he says, it will require neither ligature nor compression, but will cease immediately on the introduction of a piece of bougie into the opening.

" To prevent a fresh accumulation of serum in the cavity, some have recommended that the canula should be left in the opening for some days, whilst measures should be employed to increase the secretions from the kidneys and bowels. I have several times attempted to put this method in practice, but the pain which has occurred in a few hours has always compelled me to renew the trocar."—p. 116.

We are not informed how far the abandonment of the attempt

in these cases sufficed to avert the dangerous inflammation which might naturally be expected. As to the operation itself, which may be classed with the employment of injections, for the purpose of obliterating the cyst of ovarial dropsy, recommended by Le Dran, it could have been proposed only at a period when the pathology of dropsy was erroneous or unknown; it has had few followers or admirers in this country, and has little chance of gaining any at present, when our acquaintance with the history and treatment of this disease has become, and is becoming, at once more extensive and more correct.

At page 146, Vol. 3, two cases are related, in which the Cæsarian operation was performed after the sudden death of the patients. In the first, it was performed almost immediately after this occurrence; the child lived about six hours. In the second, an hour had already elapsed from the cessation of respiration, but the fœtus was found still living, and continued to breathe for some minutes.

The author then proceeds to investigate the cases in which this operation is necessary, and the precautions to be observed in its performance.

" The causes which call for this operation are perhaps more frequent than is ordinarily believed. The most common is the diminished capacity of the osseous parts of the pelvis : when, instead of four or five inches, the width of this cavity is not more than two, and when this space is rendered still less by the approximation of the pubes to the sacrum, the passage of the head of the child becomes impossible, and the attempt to extract it destroys the child, and often proves dangerous and fatal to the mother. The second cause of difficulty requiring this operation, is the existence of a physical impediment to parturition in the soft parts, which it is not in our power to remove, as large polypi, induration of the cervix uteri, and the hernia of this organ. The third case, in which it is required, is that where the mother, having arrived nearly at the full term of gestation, dies suddenly from apoplexy," &c.

Some cautions follow against the unnecessary performance of so serious an operation, with some remarks on the performance of gastrotomy, when the uterus has been ruptured in parturition, and in cases of extra-uterine fœtus, where there is reason to suppose the full term has been completed.

In penetrating wounds of the thorax, we are told that the advantage arising from the escape of extravasated blood, when the wound is kept open, is insufficient to compensate the risk of violent inflammation and suppuration of the walls of the cavity and the viscera it contains. Where emphysema has occurred

as a sequel of such accidents, the author has found dilatation of the wound more effectual than any other measure in putting a stop to the diffusion of air. In treating of the cases which require the performance of the paracentesis thoracis, he states from his own experience, the uncertainty of the symptoms usually considered as diagnostic of the effusion of blood, matter, or serum, in the cavity of the thorax.

Wounds of the intercostal artery. " Constant experience has shewn me, in a great number of cases, that the simple wound of the intercostal artery is not in itself so dangerous as is commonly stated, but that it becomes so from the injury of the lung with which it is for the most part complicated. When this is not the case, there is no necessity for the employment of a ligature, or any of the machines which have been proposed. The most efficacious measure for stopping the hemorrhage is to cut the vessel across, if it be partially divided, and then to apply a plug or compress of lint, supported by a double thread. When the small size of the wound does not permit the adoption of these measures, its dilatation becomes necessary."—Vol. 3. p. 175.

Observations 57 and 58 are cases in which tracheotomy was performed for the purpose of facilitating respiration. In the first, the operation was so long delayed by the obstinacy of the patient's friends, that the case terminated fatally; dissection shewed gangrene of the tonsils, velum palati, and uvula. The second, in which the larynx appears to have been affected, was more fortunate in its result. The author gives a preference to tracheotomy over laryngotomy, when the object is to facilitate respiration, more especially if the larynx be the part diseased. Laryngotomy he considers as more applicable to the extraction of foreign bodies in the trachea, and to the inflation of the lungs in cases of apparent death. In considering the danger and inconveniences connected with the operation, he alludes to the hemorrhage which sometimes occurs, threatening suffocation, from its entrance into the trachea, and producing much irritation and coughing. " Signor Virgili, a Spanish surgeon, having performed tracheotomy in the common way on a soldier, a portion of the blood which escaped from the divided vessels entered the trachea, and put the patient in danger of suffocation. In these circumstances, the Professor had recourse to the dilatation of the opening in the trachea, cutting the rings transversely; having then placed the patient with his face downwards, the blood flowed outwards; he was instantly relieved, and recovered in a few days."—Vol. 3. p. 243.

He adds, that the fortunate event of this, as of most other operations, depends on its performance at a proper period; for if

it be long delayed after the appearance of symptoms, which indicate an impediment to the admission of air, a sort of emphysematous swelling takes place in the external part of the neck and face, the eye becomes red and prominent. If tracheotomy be performed in this state it is commonly unsuccessful, and death is attributed to it, which is owing to gangrene of the parts, or to interrupted circulation in the lungs.

At page 249 are the histories of three cases, in which the lodgment of extraneous bodies in the œsophagus produced alarming symptoms. In one it was expelled by the violent efforts at vomiting from the injection of tobacco; in another, an abscess formed, and burst externally at the end of twenty-three days, deglutition not having been totally interrupted. A fistula remained for six years, through which the food and drink escaped in small quantity. In connection with this subject, the propriety of œsophagotomy is discussed. He professes himself an advocate for the operation, which, however, he has never had occasion to perform. He quotes two cases from the Memoirs of the Academy of Surgery of Paris, in which it was successfully performed by Goursaud and Rolan, as well as the Memoir of Guattani, on this subject, in the same work.

Several pages are occupied by the detail of cases of bronchocele, and the consideration of its nature, with the modes of treatment best adapted for its cure. But little value is attached to the exhibition of remedies containing alkali, as the burnt sponge, &c.; and more success is stated to result from the employment of stimulating applications externally, as a lotion of sal ammonia, camphorated oil, with spirit of ammonia, mercurial frictions, and blisters. It should seem that the employment of the seton in this affection, which has lately attracted considerable attention in this country, is not a recent proposal. The author says, " Of all the methods which have been proposed for its removal, the seton is least dangerous, and for the most part produces a radical cure, as I have frequently observed."—Vol. 3. p. 283.

In hare-lip the author prefers the knotted or interrupted suture to that called figure of eight, and made by the assistance of pins, from its producing less pain and inflammation; he confesses, however, that the want of success which sometimes follows the twisted suture, depends less on the nature of the operation than on some fault in the method of its performance. We do not remember ever to have met with an account of the following operation : " Many years ago a Prussian Professor shewed me a peculiar, and to me, completely new method of keeping the edges of the wound in contact, without the assistance of knots or pins. It consists in passing a threaded needle

first through the lower part of the edges of the wound on each side, and then, in like manner, without cutting the thread, through the upper part of each. By this means a loop of thread will be left between the two points of suture on one side, and the two ends of the thread on the other, which, when tied together, form a similar loop. The loop of one side being passed through that of the other, both are carried to the back part of the head and fixed there, and the edges of the wound by this means kept in contact. I have tried this method in two cases, in which I found it easy of execution, and unattended by accidents. I am of opinion that it is preferable to the employment of adhesive plaister, or of the knotted or twisted suture." —p. 337. Where a portion of the maxillary bones projects, the author is adverse to its removal, as this is often dangerous, and productive of greater deformity than the disease itself. Experience besides has shewn him, that when the edges of the deformity are united over the osseous projection, if the patient be young it diminishes in process of time, and almost wholly disappears.

On the subject of diseases of the lachrymal passages, we have many valuable observations derived from experience. The following remark might, we fear, be justly applied to many practitioners in this country even at present, for although much has been done to extend our acquaintance with that interesting class of diseases, those of the eye, it cannot be denied, that a strange and disgraceful want of information on the subject is too often to be met with. " It is an error into which too many practitioners fall, to consider under the same head all diseases of the lachrymal passages, without paying attention to their seat, their nature, the parts in which they occur, or the period they have continued."—Vol. 3. p. 385.

The author, from the results of his own observation, denies the statement of Scarpa, that the distended state of the lachrymal sac, forming the hernia or dropsy of this part, is dependent on the altered secretion of the meibomian glands. In the cases in which there was no affection of these parts, pressure on the distended sac still produced the escape of the same kind of fluid as in those of the opposite kind.

The fourth volume is almost exclusively devoted to the consideration of the diseases of the eye. The first subject treated of is Hypopium, a term which the author employs with great latitude, including under it effusion of lymph under the corneal portion of the conjunctiva, and between the layers of the former membrane, as well as the collection of pus or lymph in the anterior chamber. When the quantity of matter collected in

either of the two latter cases is such as to impede vision, he recommends its evacuation by the puncture of the cornea with a cataract knife.

The justice of the following remarks on the treatment of ophthalmy will, we feel convinced, be admitted by all who are in the habit of witnessing the treatment of this disease :—

" Ophthalmy being a common disease and easily known, its cure ought not to be difficult, particularly as the remedies commonly employed are simple and known to all. What professor is unacquainted with the good effects of evacuants, of local emollients and sedatives, of local blood-letting, of astringents, and resolvents? Yet it must be confessed, that in spite of this general acquaintance with the remedies and with the disease, the cures are neither so frequent nor so perfect as they ought to be, and that under the use of our remedies, the inflammation instead of diminishing, increases even to the loss of sight. Mature reflection on these results will shew, that they depend on the inopportune application of remedies diametrically opposed to the state of inflammation. We every day hear of cures performed by remedies, which are boasted of as specifics for diseases of the eye, but we also daily see, that the same remedies in other cases produce dangerous accidents and blindness. These different effects of the same remedy can only depend on the difference in the state of the inflammation when it is applied. Hence it is evident that the termination of this disease depends in great part, if not altogether, on the selection of remedies adapted to its state, period, and causes."—p. 44.

The purulent ophthalmy of children newly born is described with accuracy, and emollient mucilaginous applications recommended for its cure, together with the injection of fluids under the eyelids by means of Anel's syringe, for the purpose of " cleansing the parts, and preventing suppuration."

Tumours in the eyelids he recommends to be removed by a single stroke of the scissors, when they are small and their bases narrow ; in opposite circumstances the tumour is to be divided, and the cyst to be removed from its connections by a pair of forceps. He prefers the removal of these tumours by the external surface of the eyelid to that by the internal, recommended by Scarpa; his reasons are, the difficulty of everting the lid when the tumour is situated near either canthus, and the risk of wounding the cartilage when it is placed in the vicinity of the ciliary arch.—p. 74.

Signor Flajani next enters into a long description of cataract, its various kinds, and the operations proposed for its removal. He draws a comparison between the numerous instruments and

operations invented for the cure of this disease, and those for the performance of lithotomy. In speaking of the comparative success of the two operations, at that period commonly employed, extraction and depression, he says, " I have not had a sufficient degree of experience to decide in favour of one or other measure ; but I cannot omit mentioning here what I have collected from all the cases on which I have operated, either by extraction or depression. My choice of either method has been guided by circumstances and the structure of the parts, without the spirit of party in one or other way. To confess the truth then, I am obliged to say, that the accidents which have occurred after extraction have always been greater and more serious than those of depression. Besides long and painful ophthalmy, I have seen the cornea remain opaque, with an unshapely cicatrix, the pupil contracted and irregular, a diminution in the size of the bulb, and even Staphyloma. In depression, on the contrary, except acute pain and opthalmy, which sometimes occur, the accidents have been unimportant. Those, however, who have suffered extraction without accidents have recovered more perfectly, and with a greater degree of vision. The following are the results : Of forty-six operated on by me, twenty-two have undergone depression : of these, five only have regained vision in a useful degree; three see sufficiently to guide themselves; the others remain completely blind. Of twenty-four, on whom extraction was performed, nine have recovered vision perfectly, six are unable to distinguish minute bodies, but see sufficiently to conduct themselves without assistance ; the others remain blind."—Vol. 4. p. 109.

Two cases are related, in which the author effected the formation of an artificial pupil in the following manner: The eye having been fixed, a common cataract needle cutting on both edges was introduced into the lower part of the cornea, half a line from the Sclerotica. The point being carried in front of the iris, a perpendicular incision was made in nearly the whole extent of the membrane, and then a second transverse one, dividing the former in its middle, and thus making a cruciform incision with four angles. In neither case was the inflammation which succeeded of a serious nature, and the pupil ultimately assumed a spherical form.—p. 132.

The succeeding subjects relating to the eye, are Staphyloma, opacities of the cornea, Pterygium, Amaurosis, ex-ophthalmia, and extirpation of the ball of the eye. These we pass over, as they contain little which has not been anticipated, and as the opinions advanced coincide for the most part with those of most recent writers on the same subjects.

We proceed to notice injuries of the head, of which there is a copious collection of examples, with observations on their nature and treatment. In considering the cases which require the application of the trephine, we meet with the following remarks: " This operation, though not in itself dangerous nor difficult of execution, should not be performed without positive necessity, in spite of the serious accidents which are the ordinary symptoms attendant on blows of the head. These are the effects of concussion, or extravasation of blood between the cranium and the membranes, or within the brain itself, or else they depend on the depression of bone. Concussion, unaccompanied by extravasation of blood, does not require the use of the trephine, but of evacuants or stimulants, according to the violence and duration of the symptoms. Daily experience has taught us, as the annexed observations prove, that many blows on the head, with symptoms of extravasation of blood and fracture, have recovered by the use of general and local measures only. It is not sufficient to refer to the authority of celebrated authors, who assure us that they have repeatedly performed this operation without danger to the patient. This may be true ; and in cases where other measures fail to remove the dangerous symptoms, every thing ought to be done to save the patient ; but where the danger is neither great nor immediate, the cranium should not be trephined, much less should this be repeatedly done, unless necessity requires it. I know that in many cases of extravasated blood, the delay of this measure has cost the patient his life ; but I must confess, from my daily practice, that I have seen many patients recover, although the necessity of the trephine was indicated by the nature of the symptoms. It is a valuable rule of practice to defer this operation, when the symptoms requiring it have occurred at the moment of the injury, without any apparent sign of fracture or depression of the bone, as the symptoms are then to be attributed to concussion rather than extravasation."—Vol. 4. p. 274.

These observations, in themselves important, become more interesting from their coincidence with the opinions entertained on this subject in this country. The caution and hesitation in the use of the trephine by English surgeons at the present day, forms a striking and a favourable contrast with the indiscriminate and imprudent employment of the same measure at a comparatively recent period. For this improvement in our practice, we are chiefly indebted to Mr. Abernethy, who was the first to satisfactorily distinguish and point out the peculiar symptoms of concussion and compression, and to establish on principle the cases in which the trephine was required, those in

which its use was improper, and those in which it might be deferred. In France too, we believe, that the same indisposition to the use of this instrument prevails, less perhaps from the operation of the causes we have mentioned, as producing the same result with us, than from the effects of a prejudice excited by its injurious consequences, as recorded by Desault, consequences in reality to be ascribed, rather to the crowded and unhealthy condition of the hospital in which he made his observations, than to any thing connected with, and inseparable from the operation.

This is the last subject in these volumes which presents any thing that seems worthy of particular notice. There is one point, however, connected with the treatment of a great part of the cases they contain, which we cannot pass over in silence; we allude to the liberal manner in which the author seems to have employed venæsection. This is the more remarkable when compared with the cautious and sparing manner in which the vital fluid is evacuated in a neighbouring country, a subject which has often afforded matter of surprise and inquiry. At the period too in which this work made its appearance, the specious but unsolid principles of Brown exercised an arbitrary sway over the greater part of the Continental practitioners, and kept them in a state of delusion, which is now rapidly disappearing. However this may be, certain it is that Signor Flajani recommends phlebotomy to an extent, the good effects of which are visible in his practice, and which would satisfy the warmest advocates of this measure, who have of late years offered themselves to public notice in this country. We question, indeed, whether the unsparing manner in which Signor Flajani practises it, either as a precautionary measure, or in cases far from serious in their nature, would not draw down the disapprobation of the most determined supporters of this " heroic remedy."

In conclusion, we may with great justice say, that the whole tenour of the work is well calculated to give an advantageous idea of Italian surgery, and of the professional acquirements of the author. It is much to be wished that men of experience would more frequently communicate their information to the public, particularly those holding public situations, in whom, a failure in this respect should be considered as little short of a breach of duty.

ART. III. *Nouvelle Division des Apoplexies, par A. Serres,*
Chevalier de la Legion-d'Honneur, Medicin de l'Hôpital de
lá Pitié, Chef des Travaux Anatomiques des Hôpitaux, &c.
(Annuaire Medico-Chirurgical. Paris. 1819.)

THERE is perhaps no disease which has more frequently than
apoplexy formed the subject of the investigations of physicians
and physiologists ; nor is this surprising when we consider the
frequency of its occurrence, and the important and interesting
nature of its symptoms. Notwithstanding the pains which have
been bestowed, and the talents which have been employed upon
it, it is rather discouraging to see how little we know that is
certain of the immediate nature and causes of the disease ; and
by no means the least mortifying part of the business is to find,
that the discrepancies and differences of opinion are quite as great
between those who draw their conclusions from the results of
their own observations, as among those who content themselves
with the less useful, but more fascinating task of forming hy-
potheses.

Impressed with these sentiments, M. Serres comes before the
medical world with the intention of pointing out some of the
errors of those who have preceded him, and the hope of eluci-
dating the nature of the disease by a more accurate consideration
of its symptoms. He states, and the statement claims our
attention, " that the division which he submits to the judgment
of those who observe, and which he thinks worthy their notice,
from its importance in practice, is the result of seven years'
practice at the Hôtel-Dieu and La Pitié, of seven years' re-
searches at the amphitheatre of the hospitals, on the dead body
and on living animals."

The first section of the Memoir is composed of an inquiry
into the causes of the imperfection of the Diagnosis in Apo-
plexies, and a short sketch of the sentiments of some of the
most important authors, who have written upon this subject.
The division of apoplexy into sanguineous and serous, which
exercised so marked and injurious an influence on practice, was
first proposed by La Riviere, but derived its principal authority
from the support and implicit credence which it received from
Morgagni in his immortal work. M. Portal, in his Memoirs,
read before the Academy of Sciences and the Institute, was one
of the first to discard the prejudices of education and authority,
and to examine, with philosophical caution, the real value of
these pretended distinctions, which a short period sufficed to
convince him had no existence. But this, though the best

known and apparently best established division of apoplexies, was far from being the only one; the works of authors abound with histories of nervous or sympathetic apoplexies, with material and immaterial nervous, venous and arterial, sthenic and asthenic apoplexies, of which the only thing that can with certainty be asserted is, that however accurately we may be acquainted with the symptoms of the disease, we are far from having a satisfactory knowledge of the causes which are essential its production.

Of all the circumstances connected with apoplexy, none appeared more certain than that its existence was necessarily linked with the existence of compression of some part of the encephalic mass, and the occasional occurrence of similar symptoms as the consequence of external injuries, might have sufficed to remove the doubts of the most sceptical. It is true, that the symptoms were by no means proportionate to the degree of pressure, nor were cases at all times wanting, in which all the signs of apoplexy were present, while examination after death detected no morbid appearances. To these facts, the supporters of compression were unable to reply, except by the gratuitous supposition of a peculiar acrimony of the effused fluids, of incorrect or imperfect observations, or the assumption, that the effects of extravasation varied according to the parts in which it took place. But without having recourse to instances which admit of dispute, the records of surgery abound with the histories of cases, in which portions of the skull, and other extraneous substances pressed upon, or were lodged in the brain, without producing any of those effects which must inevitably have occurred, where pressure uniformly was followed by apoplectic symptoms.

These facts receive additional confirmation from the experiments performed by M. Serres, in the hope of solving the important question,—whether the effused fluids are connected with apoplexy, as cause or effect? In one series, after trepanning the part of the skull corresponding to the longitudinal sinus, in dogs of various ages, birds and rabbits, he divided this vessel, and closed the wound in the integuments. In all, the results were the same; neither somnolency, nor any of the other symptoms of apoplexy followed, although the examination of the cranium shewed the existence of extravasation, sometimes very considerable in quantity. To use his own words, " the result was a strong presumption against the generally received opinion, for this effusion might be compared to that which occurs in apoplexies, between the dura mater and arachnoid, or between the latter and the pia mater." In two other sets of experiments on the same animals, extravasation was produced within the

ventricles, and in artificial cavities formed in the substance of various parts of the hemispheres of the brain. In both, the succeeding circumstances were the same ; whatever might be the extent of the effusion, it was never followed by any apoplectic symptoms. Some may, perhaps, be disposed to contrast the results of these experiments with those of similar ones performed by M. Portal and others ; and it must be confessed, that it would be no easy task to reconcile the great differences which exist between them ; but it must be recollected, that the conclusions of M. Serres have all the authority of positive evidence, and could only be subverted by the establishment of compression as the uniform cause of apoplectic symptoms. But there is a well known and admitted fact, which at once decides this point, we mean the occasional discovery of apoplectic effusions in the brains of individuals who have died of other diseases, and where a considerable period has elapsed since the apoplectic attack, the patient in the interval enjoying in perfection his mental and bodily powers. In alluding to this fact, M. Serres asserts, in contradiction to the statements of Dr. Spurzheim, that the French practitioners have been familiarly acquainted with it for some (" quelques") years. In England it has been known to all who have attended to the history of this disease, at least since the time of John Hunter, who noticed the fact in his work on Inflammation, &c.

The conclusion which M. Serres feels warranted to form from his experiments on living animals, from examinations after death, and from the recovery of patients whilst the extravasated blood remains, is, that on the one hand apoplexies may exist without effusions, and on the other, effusion without apoplexy ; and that in those instances where both are combined, the extravasation is to be considered as the effect, and not the cause, of the apoplexy.

We proceed in the next instance to the examination of the division which M. Serres proposes as more natural than any yet employed, and more accordant with the phenomena of the disease. Having long in vain endeavoured to distinguish serous and sanguineous apoplexies, he directed his attention to the variation which the symptoms present ; nor was he long before he perceived that the cases of apoplexy which he observed, might be arranged under two distinct and natural heads.—
1. Those which were simple, and not attended by paralysis.
2. Those which were complicated, with loss of motion on one or other side.

After this division of the symptoms had been once established, another question naturally presented itself—was each of these

divisions the effect of chance, or of some cause appreciable by examination after death? M. Serres affirms, that the latter is always the case, and that in those instances where paralysis does not exist, the affection is confined to the membranes of the brain, whilst in those which are attended by the loss of motion in some part or other, the substance of the organ is more or less injured. These varieties he proposes to distinguish by the terms, meningeal and cerebral, and explains the absence or presence of paralysis in the one or other case, by the sound or injured state of the brain. In meningeal apoplexies the brain is always found healthy; the membranes are altered in different degrees; sometimes, when the duration of the disease has been considerable, and the serous effusion copious, the pia mater is injected, its vessels dilated, the arachnoid opaque and thickened; when a sero-sanguineous effusion was confined to the ventricles, the arachnoid slightly opaque in its whole extent, was reddish in the interior of the ventricle, and covered with miliary granulations, very numerous, and limited to the same extent as the effusion; where a similar effusion had occurred on the hemispheres, the arachnoid covering them was sensibly inflamed; and lastly, where no effusion had taken place this membrane presented a dry appearance, with thickening, and the formation of false membranes. In apoplexies, on the other hand, complicated with paralysis, we find no serous or sero-sanguineous effusions in the natural cavities of the brain, or the intervals left between the duplicatures of its membranes. There is no change in the structure of these parts; the disease is foreign to them; but the brain, changed in structure, appears to be the seat from which the apoplexy has proceeded. Cavities are formed in different parts of its substance; the cerebral matter which surrounds them is irritated, reddened, and indurated, according to the interval which has elapsed between the formation of the cell and the occurrence of death. The blood, which fills the cells, is coagulated or semi-fluid, according as they occur in the cortical or medullary substance, in the corpora striata, the thalami, or the ventricles, into which they penetrate by bursting its parietes. When the blood is removed from the cavity, the ruptured capillaries are seen loose at one extremity, attached at the other, and continuous with the neighbouring vessels. A fine injection driven into the carotids penetrates the cavity, and leaves no doubt of the manner in which the effusion has been produced.

From all these facts, M. Serres deduces the three following propositions:—1. That when apoplexy presents no trace of paralysis, it may be presumed that it is confined to the membranes, and that the brain is not the centre of activity of the

disease. 2. That when, on the contrary, apoplexy is complicated by paralysis, the brain, and not the membranes, will be found to be the principal seat of irritation. 3. That the serous, sero-sanguinolent, sanguine, or purulent effusions, are the effects of the irritation of the brain and its membranes, or of the rupture of arteries or veins which may occur in the course of the apoplexy.

We shall defer some remarks, which naturally suggest themselves on the proposed division, and follow the author in the sketch, which he gives of the history and symptoms of each, with their varieties. He states that meningeal apoplexy attacks principally children below fifteen, and adults above sixty; in women it occurs before the latter period, and more frequently than in the other sex. Of forty-one meningeal apoplexies, thirty-three occurred in women, and eight only in men. The invasion of this species is almost always slow, gradual, and preceded by various precursory symptoms, as dulness, incapacity of mental and bodily exertion, drowsiness, &c.; at the same time respiration and circulation are slower than natural, the heat is below the natural standard, the secretions are diminished, and digestion impaired. When this apoplexy occurs as the consequence of the recession of chronic or febrile eruptions, of blows or falls on the head, its attack is more sudden, and often preceded by general pain of the head.

The gradation is sometimes so imperceptible, that the patient is thought to be asleep, when apoplexy has already declared itself. A circumstance on which M. Serres places perfect confidence, as affording a certain diagnosis of this state from sleep, is the peculiar discordance which exists between the number of inspirations and the pulse in a given time. In sleep respiration is slow, and the circulation is proportionally diminished in frequency; in apoplexy the equilibrium between these two functions is destroyed. The frequency of the pulse is strongly contrasted with the slowness of the motions of inspiration. The state of the pulse may vary according to the age and strength of the patient; but this discordance of action between respiration and circulation never varies; in proportion as it takes place coma occurs; in the paroxysm, the stupor is at its highest degree, when this discordance has reached its maximum. Should general experience confirm the uniform occurrence of the discordance on which M. Serres insists, it cannot fail to be considered as a valuable addition to our diagnosis in most embarrassing circumstances.

Another important remark is, that in meningeal apoplexies respiration is equal on both sides, that is to say, the right and

left sides of the thorax are equally dilated. We do not remember to have seen this fact alluded to, though it is evident that it is a necessary consequence of the absence of paralysis. For the same reason the mouth is not distorted, the patient lies in a straight position, his body not bent to either side; if excited he presents either hand, he moves either leg. These last are negative symptoms, but they are of the greatest importance.

The varieties which M. Serres has discovered in meningeal apoplexies are five: 1. Meningeal apoplexy without effusion. 2. With simple serous effusion. 3. With sero-sanguinolent effusion. 4. With rupture, or aneurysmal dilatation of an artery. 5. With rupture of a vein. Hence it is seen that he derives the characters of these varieties from the nature of the morbid appearances met with after death. Although such division presents some advantages as regards method, we think it objectionable in a practical point of view, for independently of the complication of one variety with another, which no arrangement could always avoid, it renders impossible any distinction of cases during the lifetime of the patient, as we conceive, the legitimate but too much neglected object of the arrangement of diseases and their varities by artificial means. It may, we think, be laid down as a principle, that all divisions of disease, which are not founded on essential and striking differences of symptoms are useless, and not calculated to assist the practice of medicine, the point which all profess to hold in view. That this is not the case in the present instance is evident; and M. Serres says, that though meningeal apoplexies present important varieties relative to the nature of the effused fluid, he has never been able, in spite of the most attentive observation, to discover any particular sign, which might be regarded as positive. With this fact before him, and the conviction of the errors which followed a division of a similar kind, and equally correct as far as regards the results of examinations after death, we mean that of apoplexy into serous and sanguineous, we cannot but regret that the author should have quitted the mode of investigation by which he had so happily commenced.

The morbid appearances met with vary according to the variety of the disease. 1. In meningeal apoplexy without effusion, the pia mater is thickened and dry, its vessels slightly distended, the arachnoid is opaque, and covered in the ventricles with granulations of a whitish colour. 2. In meningeal apoplexies with serous effusion the meningeal arteries and veins are distended, the pia mater is covered with a network of minute vessels; the arachnoid is very opaque, much thickened, in some spots covered with a whitish exudation, particularly apparent

about the principal veinous trunks; the opacity and thickening are greatest at the basis of the brain, at the part covering the pineal gland, and in the ventricles. The arachnoid lining the ventricles is often changed in different degrees from that covering the hemispheres, and the miliary granulations, already mentioned, are met with in no other situation. The choroid plexus are frequently altered in structure in this variety, presenting transparent cysts, formed by a thin pellicle, which may sometimes be divided into two layers. These cysts are filled by a fluid, sometimes serous, sometimes sero-sanguinolent. More rarely they inclose a clot of blood. These cysts frequently exist on both sides; at other times on one only. 3. In meningeal apoplexies with sanguinolent effusions the alteration of the pia mater is nearly similar to that of the preceding variety, but the arachnoid is red and manifestly inflamed. This irritation is remarked principally in the lateral ventricles ; it is sometimes, however, met with on the hemispheres, particularly when apoplexy has occurred as the consequence of blows or falls on the head. 4. In meningeal apoplexy with arterial rupture, all the arteries are much distended; a section, or rupture, is discovered of a branch of larger or smaller size. The edges of the opening are irregular; sometimes the division of the vessel is complete, at others a small portion connects its two extremities ; more rarely some point of the artery has become aneurismal, and the sac has given way. M. Serres has met with this occurrence in each of the following vessels : the carotid whilst contained in the cavernous sinus, the basilar artery, and the communicating branch. In such cases the hemorrhage is often mortal, the blood is in clots, extending over the whole encephalon, and penetrating with the membranes into the ventricles. 5. The rupture of veins is still more frequent than that of arteries. Whenever blood is met with in a coagulated state between the membranes or within the ventricles, the substance of the brain being uninjured, we may be assured that the hemorrhage is the consequence of the rupture of an artery or a vein. " I have never failed," says M. Serres, " in the numerous cases I have met with, to discover, by attentive dissection, the vessel from which the bleeding proceeded." Venous rupture frequently occurs in the choroid plexus, the blood being contained in a thin cyst, or between the layers of the pia mater.

Of all the varieties of meningeal, the most frequent is that which is attended with serous effusion, it is to the other varieties in the proportion of seven to two.

M. Serres concludes his history of meningeal apoplexy by the following observations : " In presenting the new divisions

which form the subject of this Memoir, I had reason to fear that the facts, which had served for their basis, had escaped the notice of observers. This is particularly the case with meningeal apoplexies, attended by venous or arterial rupture, as most frequently, when effusion of blood is found on the membranes of the brain, inquiry is limited to its quantity, and does not extend to the source whence it proceeded."

Of cerebral apoplexy.—The invasion of this species is often sudden and instanstaneous, particularly in corpulent sanguine subjects, with short necks. Sometimes the attack is preceded by a fixed pain in the head, by numbness of one side of the body or face, difficulty of articulation, or loss of memory. Whether these symptoms have preceded or not, the face at the moment of the attack becomes unusually flushed ; the facial and cervical veins swell ; the tongue first becomes affected, next the sight, and lastly hearing ; the patient loses all feeling ; he falls, and upon that side which will be paralyzed at a future period. Some hours after the invasion, if the brain be not already injured at some point of its surface, respiration becomes much slower ; the pulse is strong, hard, and frequent ; as respiration becomes embarrassed the action of the heart increases. There is here a contrast between the function of the lungs and this organ which has not yet been attended to. The force and hardness of the pulse last until the brain gives way, it then becomes small, hard, and frequent. Respiration is equal on both sides during the first hours, or sometimes days, of the attack ; at last the thorax and lungs dilate unequally, one side is immovable, while the activity of the other seems increased. This occurs before hemiphlegia has declared itself, and it is the more important not to neglect this symptom, as by it we are enabled to foresee the side which will be paralyzed, and prevent in some cases this complication, by acting with promptitude. At last one or other side becomes motionless. Sometimes the paralysis begins in the muscles of the lips, sometimes in the extremities : there is nothing fixed in this respect. Sometimes the paralyzed limb preserves its sensibility, but almost always the loss of this function precedes or accompanies that of motion. M. Serres is of opinion, that this modification of sensibility depends on the seat of the organic lesion.

The varieties of cerebral, as of meningeal apoplexy, which the author describes, are five ; but unlike them they have this advantage, that they are derived from symptoms, and are equally natural with the primary division of the disease into meningeal and cerebral. They are, 1. Cerebral apoplexy, with hemiplegia. 2. Cerebral apoplexy, with paralysis of an

arm. 3. Cerebral apoplexy, with paralysis of a leg. 4. Cerebral apoplexy, with double hemiplegia. 5. Cerebral apoplexy, with complete paralysis at a single attack.

M. Serres refers the consideration of the second and third varieties to a work, of which the present Memoir will form a part; he contents himself at present with saying, that in seven cases of cerebral apoplexy, with paralysis of a leg or arm only, he has found one part of the encephalon principally affected. In the first variety, or that with single hemiplegia, he states that he has uniformly found organic change in the hemisphere opposed to the paralytic side. He doubts the correctness of the few cases of an opposite nature, even that of Malphighi, recorded by Baglivi, and others by Morgagni and Portal. " I shall never," he says, " believe the fact, until an observer, with all the care employed at the present day in such researches, shall say, I have seen the patient hemiplegic on the left side, and found disorganization in the left hemisphere of the brain, or in the right one, when the paralysis has affected that side of the body."

Cerebral apoplexy, with double hemiplegia, may occur at two periods of time more or less distant. The seat of the disease is the same as in that where there is paralysis of one side only. The two hemispheres are affected in succession, and the cavities are recent if the double hemiplegia has occurred instantaneously, or with an interval of a few hours or days. But if, as most commonly happens, a fresh attack paralyzes the sound side of a patient already hemiplegic, two cavities are also met with, one of which is ancient, and the other of recent formation, the marked differences of each preventing all risk of confounding them together.

In the last place, a single attack of apoplexy may paralyze the whole body; here both arms, both legs are motionless; the mouth is not distorted, a pathognomic sign with the preceding of this variety. Examination shews that the seat of the disease in this instance is always in the tuber annulare; sometimes the blood is lodged in its substance; at others it breaks through its sides, and is effused at the basis of the cranium; in all death occurs with frightful promptitude, the patients perish as though suffocated, or as animals in whom both nerves of the eighth pair have been divided. In one case of this description M. Serres met with a second effusion, of small extent, in the substance of the corpora olivaria and pyramidalia: the patient survived the attack only seven hours.

Of these varieties the first, or that with simple hemiplegia, is by far the most frequent. It bears to all the others the propor-

tion of twenty-five to one. It presents many modifications depending on the intensity of the symptoms, the anomalies in the loss of motion and sensibility, the one or the other being lost, sometimes remaining. It is in some cases connected with loss of vision on one side. M. Serres has observed the loss of the sense of smell in one nostril, whilst it remained perfect in the other.

Whilst in this variety one side of the body retains its power of muscular motion, in that with double hemiplegia the whole muscular system, with one exception, becomes motionless. This exception is formed by the muscles employed in deglutition, and M. Serres is of opinion, that this immunity is owing to the large share, which the branches of the sympathetic have in the formation of the pharyngeal plexus, whence these parts derive supply of nerves. The principal diagnostic between this and the succeeding variety consists in the possibility of tracing the successive paralysis of each side in the course of the same attack of apoplexy. Where this is wanting, and we find the patient with both sides paralyzed, it is impossible to say whether the paralysis is the result of one effusion occurring in the tuber annulare, or of two in the hemispheres taking place successively within a short interval of time. M. Serres also draws a distinction between the latter case occurring in the course of one apoplexy, or of two at distant periods.

Having examined the history of the divisions which M. Serres has proposed, it only remains to make a few observations on them, and on some other points connected with the disease. We shall, in the first place, for the sake of clearness, enumerate three divisions : Meningeal and Cerebral Apoplexies. The varieties of meningeal apoplexy are five : 1. Without effusion. 2. With serous effusion. 3. With sero-sanguinolent effusion. 4. With arterial rupture. 5. With venous rupture. The varieties of cerebral apoplexy also five, are, 1. With hemiplegia. 2. With paralysis of an arm. 3. With paralysis of a leg. 4. With double hemiplegia. 5. With perfect paralysis at one attack.

We have already stated the objections, which presented themselves to us against the varieties of the meningeal species, and the advantage, which those of the cerebral one derived from their existence in the nature of the symptoms. With respect to the primary division, (meningeal and cerebral,) it is evident that this is a question which experience can alone determine, for it is not to be expected that a point of such importance can be decided by the authority of one or a few individuals, however respectable their talents, or extensive their opportunities may be.

But whatever may be the result, there can be no doubt that the plan, which M. Serres had adopted, is the right one, and must be the means of adding to our stock of information. Whether apoplexies be or be not meningeal and cerebral, they are at least divisible into those with, and those without paralysis, and no small credit will doubtless be due to him, who shall first clearly connect each of these states with some corresponding change of structure or function in the brain.

Of all the circumstances attendant on apoplexy, we know of none, which is more frequently present, and which has a better claim to be considered as essential to the production of the disease, than that state of circulation in the vessels of the head, which is ordinarily expressed by the term determination to that part. We are aware that a late ingenious writer on this subject has denied the existence of this state, or at least its connection with the phenomena of apoplexy, whilst in its place he has substituted the doctrine of interruption to the circulation in the brain; but we are by no means disposed to admit that the arguments he has adduced in support of this opinion are at all conclusive. The circumstances which he conceives capable of producing derangement of the relation betwixt the arteries and veins in the brain may be reduced to two heads: 1. Those in which an increased quantity of blood enters by the arteries, the quantity passing out by the veins being more or less diminished. 2. Those in which the quantity of blood passing out by the veins is lessened in quantity, that entering by the arteries remaining the same.

Dr. Abercrombie, the writer in question, is unable to conceive the possibility of increased determination to the head independent of general plethora, because as he says " the blood is propelled equally in all directions by the heart;" but here he overlooks altogether the changes which occur in the vessels, and which act so important a part in the phenomena of health and disease, changes dependent on the vital properties which they possess in a marked degree. A moment's consideration will shew, that the velocity of circulation remaining the same, any increase in the diameter of an artery, whether we suppose it the result of increased action or debility, must be attended by an increase in the quantity of blood passing through the artery in a given time, and produce the phenomena of increased determination. That this term may be objectionable and incorrect we have no intention to deny, but the facts are certain, and till a better mode of expressing them is pointed out, we must be content to employ this. If then, either from general plethora or otherwise, an increased quantity of blood enters the head,

does it necessarily follow that it should meet with an impediment to its exit through the brain? Here again we are at issue with Dr. Abercrombie, who thinks such an impediment a necessary consequence of the unyielding nature of the parts through which these vessels pass. To us it seems by no means so, and we think that Dr. Abercrombie's error depends on the neglect of the physiological principle, which teaches us that the amount of circulation through any part is regulated by the quantity of blood, and the velocity by which it moves ; so that in the present instance, the diminution of the diameter of the veins, or rather the increased quantity of blood in them, would be compensated by the increased celerity of motion, and accumulation thus prevented.

Of the second order of causes tending to interrupt the circulation through the brain, the principal are diseases of the sinuses, tumours in the neck, and diseases of the heart and lungs. Of these we may remark, that they often exist to a great extent without producing apoplexy, and that when they appear to do so, they might with most propriety be considered as accessory to, and aggravating the operation of other causes. Diseases of the veins and sinuses, it should also be remembered, are perhaps as often to be considered as simultaneous effects of the cause to the agency of which apoplexy is owing, as in the relation of direct causes of that disease.

The same writer has attempted to draw an argument against the probability of the existence of increased determination to the head in apoplectic cases, from the various and opposite states of the system in which this disease is found to occur. But it is evident that the whole strength of such an argument depends on an assumption which he has made, and which we consider fallacious, namely, that no increased flow of blood to the head occurs independent of general plethora. To illustrate the point, he institutes a comparison between the disease as occurring in an old emaciated woman, wanting the necessaries of life, and a strong middle-aged woman, with all the luxuries and comforts of existence at hand. He asks whether it be possible to suppose that the same increased determination should occur in these two individuals, and decides in the negative, referring the symptoms to the obstruction of the circulation in the brain in both instances, although produced by the operation of different causes in each. But for our own part we see no reason for the supposed absence of this increased vascular action in the first of the two cases. Is the one more than the other individual exempt from the operation of anger, of other passions, of insolation, of intoxication, of errors in diet, and other causes which

allowedly increase the afflux of blood to the brain ? But putting
this organ for a moment out of consideration, is there, we would
ask, any state of system in which irregular determinations of
blood, to various parts and organs of the body, may not occur
as a cause or consequence of disease ? and does a state of
debility and emaciation constitute such an exception ? To both
of these questions we conceive the answer must be in the nega-
tive, and if so, it is surely but fair to consider, that what is true
of other parts of the body, is equally so as regards the brain.
We are, indeed, inclined to think, that here, as in many other
cases, extremes meet, and that morbid irregular determinations
of blood are perhaps nearly as often found to occur in the weak
and emaciated, as in the strong and plethoric. We trust that
the importance of the subject, and the value which justly attaches
to the pathological inquiries of Dr. Abercrombie, will be con-
sidered as an adequate apology for the digression into which we
have been almost insensibly led.

We have deferred till this period any notice of the treatment
of apoplexy described in the Memoir of M. Serres. It is right
to observe that, as this gentleman's object at present is rather
the investigation of the pathology and nature of the disease than
its treatment, any observation on the latter subject is incidental,
and merely subservient to the main purpose of the work. It
will be, perhaps, almost superfluous to say, that the practice
adopted is, in most instances, what would be characterized in
this country as very inert. In the majority, the abstraction of
blood is confined to that resulting from the application of a few
leeches, and the number is very limited in which blood was
taken directly from a vein. M. Serres is inclined to believe,
that when venæsection is requisite in this disease, it is more
advantageous when performed on the jugular vein than any
other. A circumstance on which he lays much stress, and a
want of attention to which he considers as often being alone
sufficient to produce a fatal result, is, that the patient's head
should be much more elevated than the rest of the body.

In conformity with the practice of most French physicians,
he employs emetics (chiefly tartarized antimony) almost indis-
criminately ; a circumstance at which we cannot but feel some-
what astonished, as this gentleman seems to be very well ac-
quainted with the injurious effects they are capable of producing,
and has in this Memoir recorded some instances. In accounting
for the histories of apoplexies, which, from the appearances of
inflammation in the stomach and the intestines, were by some
authors supposed to have their seat in those organs, he states,
that he is of opinion that this idea arose from the examination

of the bodies of those apoplectic patients to whom emetics had been given without producing vomiting, and where they consequently caused irritation of the stomach and intestines ; he gives several such cases from his own practice in the Hôtel-Dieu. He thinks that in these instances the stomach is paralyzed ; but besides, that the existence of this affection of truly involuntary organs stands in need of proof, the absence of vomiting is readily explained by the paralysis of the abdominal muscles. It seems to us certain, that in two cases of double hemiplegia, the second effusion was produced by the effects of an emetic.

Art. IV. *Des moyens de parvenir a la Vessie par le Rectum, avantages et inconveniens attaches a cette méthode pour tirer les pierres de la vessie avec des observations a l'appui. Par L. J. Sanson, Docteur de la Faculté de Paris, Chirurgien interne à l'Hôtel-Dieu de la même ville, Elève de l'Ecole pratique, Ex-Chirurgien aux Ambulance de la Vieille Garde, &c.*

No point seems more completely established in surgery than that the operation of lithotomy, as performed in men according to the lateral method, is in every respect far preferable to any others hitherto proposed or practised. The success of Cheselden alone was adequate to shew, that if it is unsuccessful, the chances are fifty against two, that it is more the fault of the operator than of the operation. Since his time the lateral operation has received some improvements, and has been executed with additional facility ; nor has an accumulation of evidence in favour of the soundness of its principles been in any degree deficient: on the contrary, daily experience proves that it is not so desirable to invent new methods of operating, as it is to study and repeat the already established mode. It is the same with regard to the introduction of new remedies, which is sometimes prejudicial, by calling the attention of medical men from the employment of such others, as have been used for many years, and will be used long after many of those, which are only recommended by fashion, have sunk into the neglect to which their inefficacy or uncertain operation must eventually bring them.

It is not without feelings of this kind that we have attentively perused the above Memoir, which, although it must be regarded with great caution on account of its heretical tendency, confirms

the maxim of Pliny,—" nullum librum tam malum essse, quin aliquid boni contineat," since several cases and practical observations, highly worthy of consideration, are occasionally to be found in it.

In the first chapter is contained a short abstract of the different methods of performing lithotomy, which have been devised, from the time of Celsus down to the present day. After an enumeration of the steps essentially composing the lateral operation, it is admitted that the advantages of that method over all others are incontestible ; but it is nevertheless said to be liable to weighty objections. Here follows the catalogue of evils, several of which seem to have been forgotten by other modern surgeons as well as by M. anson, as being produced by the *gaucherie* of the operator more than by the deficiency or imperfection of the precepts, which have been laid down for the operation. " Among the unfortunate accidents which may succeed the operation, hemorrhage is at once the most dangerous and frequent. It is also for the purpose of avoiding it that instead of the proposal of Cheselden an infinity of others have been substituted, which are now forgotten, because they either did not accomplish the end proposed, or even if successful, as executed by their anthors, have not been crowned with the same happy results when they have fallen into other hands."

Like many of the continental surgeons, this gentleman seems to be more inclined to account for the occurrence of severe hemorrhage by supposing that the distribution of the vessels is irregular than to acknowledge that the operator is in fault, for having divided parts which should have been at some distance from his knife. "The advantages," he thinks, "likely to accrue from such modifications of the operation as have for their objects to avoid hemorrhage are therefore very precarious, since the distribution of the parts to be divided is not constant." M. Roux also seems by no means unwilling to account in a similar way for the hemorrhage, which he confesses occurs after this operation so much more frequently on the continent than in England. If such be not the meaning of the following passage contained in the narrative he published of his professional visit to London, the misrepresentation can only be accounted for on the supposition of the greatest ignorance on the part of its author. "This artery," he informs us (the perineal), " is the sole immediate source of the hemorrhage which may take place during the operation of lithotomy. The trunk of the artery from which it proceeds (the internal pudic) *is quite inaccessible in the operation; unless it deviate from its natural course, I know not how it could be reached.* The inconvenience to which one is exposed in

' lateralizing' to much either the superficial or deep incision in the lateral operation, is not that of opening the pudic artery itself, but of dividing the perineal artery nearer its origin, and where, consequently, it can furnish a larger quantity of blood." It is really difficult to imagine how such an assertion should be made by a professor of operative surgery ! To those at all acquainted with the situation of the vessel in question, it must appear in no small degeee enigmatical—but to return to the Memoir more immediately under our consideration.

" I am fully aware," says M. Sanson, " that hemorrhage is not always attended with fatal consequences, but," continues he, " let us suppose an alarming loss of blood, and let us apply the most efficacious means in our power for stopping it. Severe experience proves, that cold effusion has excited peritonitis, and that plugging the wound (tamponnement), that method so sure and efficacious in similar instances, has caused inflammation and suppuration of the cellular tissue of the pelvis," &c. The objection to the latter mode of stopping hemorrhage, seems to us by no means valid, nor is the operation of cold effusion likely to be effective in stopping the bleeding from a considerable artery when wounded. Certainly neither of these considerations, nor the following, which conclude the list, can offer the least rational ground for abandoning the lateral operation. " The dangers of hemorrhage, and of wounding the rectum, are not the only inconveniences attached to this method. We cannot regard lightly the difficulties caused, as well in the extraction of the stone as the subsequent reparation of the wound, by a deep, narrow, contused opening, offering in its course many different tissuses, which must inflame, each in its own peculiar manner, and perhaps involve in that inflammation important organs situated in its neighbourhood."

Such are the disadvantages of the lateral operation, as stated by the author ; and we shall soon have an opportunity of observing which of them are avoided by the new plan he proposes to adopt. We must, however, at the same time take into account what others are incurred, before we decide on the comparative merits of the two operations.

The second chapter begins with an assertion, which, if it were not entirely incorrect, would at once tend to shew that the principles of the lateral operation are fundamentally objectionable ; but we have already alluded to a refutation of this opinion, derived from the consideration of the unparalleled success of the operation, a consideration which must always prevail over most specious reasonings. A high encomium is also bestowed on the invention of Joannes de Romanis, commonly known by

the term of the Apparatus Major ; but we need scarcely men-
tion, that this was an operation adopted by surgeons from
avaricious motives, which was rude and painful in its perform-
ance, and extremely fatal in its consequences. After having
thus attempted to depreciate the value of the lateral operation,
M. Sanson proceeds to the description of all the parts con-
tained in the cavity of the pelvis, as preparatory to the account
of his new proposal, of which we shall transcribe his own de-
scription : " I disposed a dead body in the ordinary manner
for the operation, and after introducing a staff, which I intrusted
to an assistant, to be held in a perfectly vertical direction, I
introduced into the rectum the fore finger of my left hand,
which was in the supine position. I slid the flat surface of
the blade of a common bistoury along the finger, and having
turned the edge upwards, I divided at a single incision, and in
the direction of the raphe, the sphincter of the anus and the
inferior part of the rectum surrounded by it. The under surface
of the prostate was thus exposed : I then carried my finger along
it to its back part, and as the staff had been constantly main-
tained in the same position, it was easily felt across the rectum
and bottom of the bladder, which lie in contact with each other.
At that part I plunged the point of the bistoury in the direction
of the groove of the staff, and made an incision about an inch
long. The urine which came from the wound assured me, of
what I did not doubt, that I had penetrated into the bladder."
   To prove that the wounds of the inferior part of the bladder
would heal, if the rectum were empty, M. Sanson next relates
cases of women, in whom the communication was made in the
operations of lithotomy, merely between the bladder and the
vagina. The perusal of them can alone decide whether they
warrant the conclusion deduced ; on this account, therefore, and
because they constitute the most useful part of the Memoir, we
shall make a concise abstract of two, which were not before
published, and are extremely valuable on several accounts.
They occurred in the practice of M. Clemot, one of the sur-
geons of Rochefort, and were communicated by him to M.
Dupuytren.
   The first happened in a young woman, of twenty-four years
of age, who had had a stone in the bladder for six years. It
was easily felt with a sound, and the fingers introduced into the
vagina perceived it across the vesico-vaginal septum : it seemed
to be about the size of a duck's egg. M. Clemot, considering
that the incontinence of urine, so frequent after all the methods
in which the division of the urethra is made, had induced many

surgeons to prefer the high operation, determined on performing the operation of Celsus, commonly termed the apparatus minor. This he considers to be better suited to women than men, on account of the lesser thickness of the parts to be divided, and for several other reasons, which it would be unnecessary at present to enumerate. "The patient," says M. Clemot, " being placed in the ordinary manner, I was unable to reach the upper part of the stone with the fingers in the vagina, or to draw it outwards, as I expected to have done. I then passed into the bladder, through the urethra, a staff without any termination of the groove, (sans cul-de-sac.) I passed into the vagina a wooden gorget, used in the operation of fistula in ano. I raised one of these instruments against the other across the vagina and bladder, in making them form an angle at the height, where I intended to finish my incision in the vagina. Entrusting the staff to the assistant, I held in my left hand the gorget, with which, depressing the commissure of the labia, I so exposed the vagina as to see the anterior part retained and fixed by the staff. Then holding, with the hand, which was at liberty, a straight bistoury, I passed it in the groove of the staff across the side of the vagina and bladder, which I opened at its neck behind the urethra, the latter being left untouched. I withdrew the gorget, passed my finger into the wound to ascertain the size of the stone; I returned the staff, introduced the forceps instead of my finger, and brought the stone into the vagina, from whence, with some difficulty, I disengaged it with a curette in the form of a lever."

On the fifteenth day after the operation she first perceived the passage of the urine through the urethra; at the end of a month she was enabled to retain it some time; and in six weeks she returned home with the ability of passing her urine voluntarily, and at intervals of considerable length.

A girl, twelve years old, was affected with stone in the bladder: it was as large as a walnut, and was extracted as nearly as possible in the same manner as in the other case. After the fifth day she began to pass her urine by the urethra; on the sixth and seventh she could pass it voluntarily at short intervals; on the eight she was out of bed during two hours, without being incommoded either by the dribbling or the desire to make water. She continued to go about till the 12th day, when she returned home.

Both these cases are highly valuable, as very rare examples of the recovery of females after lithotomy, without the unfortunate occurrence of incontinence of urine. They appear to us fully

to warrant the repetition of the method from this circumstance, since none of the other methods hitherto employed have been attended with equal success.

The author next continues his subject with the enumeration of all the advantages of his newly suggested operation : to us they seem to consist almost exclusively in the facility of its performance, and the certainty of avoiding any considerable vessel. But it is our opinion, that a familiar acquaintance with the anatomical disposition of the parts concerned in lithotomy will fulfil these purposes, without the necessity of laying aside the lateral operation, and incurring, by the adoption of this other, the following great disadvantages : First, That of risking the occurrence of violent inflammation of the bladder, from the passage of the fæcal matter into it from the rectum. Secondly, The danger of peritonitis from the above cause, and the great probability of the division of the pouch, formed by the peritonæum, between the bladder and rectum, which sometimes extends as far forwards as the base of the prostate gland. Thirdly, The great probability that the wound of the bladder or rectum would not be healed, and the consequent probability of the inconvenience of fistula in perinæo, which might remain during the rest of the patient's life. Fourthly, The fear that, in the event of the continuance of a communication between the rectum and bladder, through a fistulous canal, by the passage of the fæces into the bladder, the repeated accumulation of calcali might happen, as has already taken place in one instance.

It would be unnecessary and unprofitable to notice another plan for extracting stones from the bladder, which M. Sanson has proposed, if he had not related two instances in which it has been successfully performed on the living subject. It consists in the division of the under-part of the prostate gland and neck of the bladder, instead of the body of that viscus by the same means as in the above operation ; so that nearly the same parts would be divided by the bistoury as were formerly lacerated by the apparatus major. The instances of the trial of this mode occurred in the practice of M. Dupuytren : the first of them was remarkable on account of four operations for stone having been performed, at separate times, on the same individual. As the case is too long to be transcribed throughout, we shall endeavour to select its leading points.

After fifteen years from the commencement of his complaints, and six months of the continuation of sufferings, which had almost become intolerable, the man consulted a surgeon, who, after sounding him, and finding the stone, proposed and performed the operation according to the lateral method. The

external incision was begun at a distance of from seven to eight lines only in front of the anus, and was directed nearly in a transverse course towards the tuberocity of the ischium. The stone was found to weigh an ounce after its extraction. In six weeks the external wound was healed, but as at every time that he made water, a small quantity was passed by the anus, and flatulence almost continually passed by the urethra, besides occasionally some portions of fæcal matter, a communication must have been formed between the bladder and the rectum at the time of the operation. To this circumstance it is not improbable that the frequence of the recurrence of the complaint may be referred, since a nucleus could never have been wanting on which the calculous matter was quickly deposited so as to form a stone. Six months after his return to business he was again affected with his former complaints : two years and a half were passed away in a state of insupportable misery, when he again had recourse to the surgeon, who performed the second operation three years after the first. On the present occasion the incision was made more in front of the anus, being commenced at about eight or nine lines from its verge, but was prolonged in a direction similar to that of the first operation. No compact stone was extracted, but a considerable quantity of a soft and friable calcalous matter, of which the last portions were removed by injections of warm water several times repeated. The patient experienced no more delay in his recovery than he had done before ; for at the end of a month he resumed his ordinary occupations, still, however, with a continuance of his other infirmity. Fourteen months after he had undergone the second operation, he was necessitated to consult M. Dupuytren, on account of a recurrence of the symptoms of stone, which he had felt for three or four months. Besides the excrutiating pains resulting from the presence of the stone, and from a catarrhus vesicæ he still experienced those produced by the passage of the urine into the rectum, and of the fæces through the urethra. The account of his suffering would require more space than it is consistent with our limits to admit ; suffice it to say, that they were so severe as to induce the unfortunate man to await the day of a third operation with impatience !

The last described method of penetrating into the bladder having the only probable inconvenience of the establishment of a fistula communicating with the rectum, it is evident, says M. Sanson, that this patient, who already had such a complication, easily cognizable by the introduction of the finger into the rectum, had nothing to lose and every thing to gain by its adoption. For it was in fact possible, though not probable, that the

edges of the fistulous opening might not be cicatrized; and in that case, in comprehending it in the division of the sphincter and rectum, the patient might be placed in the same relation with regard to recovering, as a man operated on for a stercoral fistula, or for a puncture of the rectum in an operation of lithotomy. The operation was done on the 9th of November, 1815; the fistula was included in the incision, and scarcely any blood was lost. The extraction of the stone was promptly effected: it was about the size of a Barcelona nut, and the patient passed the remainder of the day in a perfect state of tranquillity. On the twenty-fifth day after the operation, the finger introduced into the rectum felt the fistula exactly in the same state as before the last operation. The analysis of the calculi, made by M. Thenard, having shewn that they had uric acid for their basis, it was considered proper to give the patient gaseous alkaline waters, to obviate, if possible, a relapse of the horrible malady. But, six months afterwards, he was again affected with symptoms of the stone, the presence of which being ascertained, it was extracted once more by the same method. The patient recovered equally well in this as in the former instance.

The other patient was eleven years old, and had experienced the symptoms of stone from the age of three years. After the requisite preparations, the operation was performed on the 17th of March, 1817; not a spoonful of blood was lost: a moderate sized calculus was extracted with facility. In the same night there were abundant fæcal evacuations, diluted with urine, which escaped slowly from the wound. For several days afterwards the fæces were voided with the urine through the urethra, and the urine made its escape through the wound; but in about three weeks the wound was totally cicatrized, and the patient had recovered without any infirmity.

At the conclusion of the Memoir the author says, that he was induced by motives of candour to add, that M. Dupuytren, allowing the incontestible advantages which that method offers with regard to hemorrhage, but impressed more than himself with the inconveniences of the passage of the fæces through the urethra, and of the urine by the rectum, has abandoned the operation, and has penetrated into the bladder in operations of lithotomy, without injuring the rectum, but always making his incisions in the median line, in a manner peculiar to himself.

After considering the modes of penetrating into the bladder from the rectum, of which M. Sanson has given an account in the present Memoir, although we cannot withhold the opinion, that that gentleman is not entirely correct in the objections he has urged against the lateral operation, we believe that there

may be some few cases which will constitute exceptions to the general rule, by shewing that other operations than the lateral one are indicated. The examples to which we mean particularly to advert occur to men, and are of two kinds :—First, Those in which the prostate gland, by its enlargement, offers a great difficulty to the division of the neck of the bladder, and an insurmountable obstacle to the extraction of the calculus, unless it happens to be very small. The second class of cases are those in which the stone is of such dimensions as, if entire, scarcely to admit of being withdrawn through the lower opening of the pelvis, or at least, not without the most severe injury to the rectum and other soft parts in the neighbourhood. Fortunately, however, both these kinds of cases are rare, though so many of them do exist on record as to point out the necessity of considering the subject, and of determining on the line of conduct, which should be adopted in such instances.

With regard to the lateral operation, as it has hitherto been executed on women, it must be acknowledged to be liable to some objections, chiefly on account of the frequent occurrence of incontinence of urine subsequently to its performance. It is indeed to be regretted, that surgeons are at present so little agreed as to the best mode of removing calculi from the bladder of females, so as to avoid the above disadvantage; but as the cases related by M. Sanson have been so successful in this respect, our acknowledgments are due to him for having detailed them, and we only hope that they will meet with the consideration they justly merit, so as eventually to lead to the establishment of an operation for lithotomy on females, liable to as few objections as can, with propriety and impartiality, be made against the lateral method in men.

───────────────

ART. V. *A short Relation of some Cases of Lithotomy, which occurred in the Hospitals at Paris; with practical Remarks on the best Means of suppressing the Hemorrhage sometimes attendant on the Operation, and an Account of the result of several Instances in which they were employed. Communicated by Mr. Lowe Wheeler.*

DURING the winter, spring, and part of the summer of the years 1819-20, many operations of lithotomy were performed, at the Hôtel-Dieu, by M. Dupuytren; at the Hospice de la Charité, by MM. Boyer and Roux; and at the Hospice de Per-

fectionnement, by M. Dubois, and his son, M. P. Dubois. Several of them terminated favourably, without presenting any circumstances particularly worthy of remark, either with regard to the history of the cases themselves, or the mode of operating which was adopted. Of these I made no notes at the time, and am therefore unable to give an exact account, which, with the following cases, might present a general view of the subject during the time of my visits at the different Hospitals. But of the other cases, which excited interest, and suggested useful observations, I shall give a succinct relation, containing only their more prominent points.

The first of them to which I shall take an opportunity of alluding, was remarkable only in respect to the mode of its performance. It was done on the 16th of January, 1820, at the Hospice de Perfectionnement, by M. Dubois, senior; and exhibited at the same time, an example of the great dexterity of the operator, and a very favourable specimen of the method he made use of. The patient was a middle-aged man, in good health. He was tied in the usual manner, and the operation was commenced without any further preparation than the introduction of the staff. Only one cutting instrument was used throughout the whole time : it consisted in the same kind of knife as Mr. Cheselden employed for the preliminary steps of his first operation, being pointed at its extremity, and having a convex edge. The incision was made in the skin at about an inch above the anus, on the left side of the raphe, in the situation corresponding to the interval between the accelerator urinæ and erector penis, and was extended in a direction downwards, and outwards by the side of the sphincter ani, to the requisite extent. The groove of the staff was in this way soon exposed, the point of the knife was adapted to it, and without the least hesitation, the division of the side of the prostate gland and neck of the bladder was effected, in the same direction as the external incision. All the steps here enumerated were performed in such a manner as to constitute apparently but two motions ; so that, although they were executed with the greatest caution, they required so short a time, as to render considerable attention necessary to observe what was going on. The time appeared shorter as no change of the instrument was made; but except this advantage, I am not aware that much more was gained by the mode of operating. The opening in the neck of the bladder was small, but dilated easily, when the finger was introduced into it ; the forceps were next carefully guided into the bladder, and the stone extracted with perfect ease. No hemorrhage, nor any other remarkable occurrence happened in

the progress of the case, and the man perfectly recovered at the end of a few weeks.

The whole serves to shew how much less depends on the form of the instruments, which are used, than on the knowledge of the anatomy of the parts, concerned in the operation. But as these points were amply displayed by the different operations of Cheselden, and since his time by the performance of lithotomy on the living subject, under the most disadvantageous circumstances, with no other instruments than a common scalpel, a staff, and a pair of forceps, my view in adverting to the present instance, is merely to give the outline of an extremely simple operation, adopted by one of the most distinguished French surgeons, of which I had never before been a spectator, nor have since met with any description in books.

The next case which I shall mention, was one of a boy, who was operated on by M. Dupuytren, at the Hôtel-Dieu, on Saturday, June 3d, 1820. He appeared in other respects to be in a perfectly good state of health, and fully to vindicate the assurance of M. Dupuytren, that every thing seemed to promise success to the operation. The patient did not appear much to apprehend the pain, but submitted to it with cheerfulness, and great firmness of mind. Like all the others, which I had an opportunity of witnessing at the same establishment, this operation was performed with the lithotome-cachée of Frère Côsme. It was unaccompanied by the occurrence of any untoward circumstance: the only fact with regard to the operation, which might be noticed, was, that the stone was of a pyramidal figure, being extremely pointed at one end, and bulky at the other, so that, as it rested on its base, it offered an exception to the mode of seizing the stone with the forceps, which has been recommended by the highest authority, namely, that of passing one of the blades under it, in order to avoid the disadvantage of including the stone in the direction of its largest diameter. It must be remarked, that although no hemorrhage of consequence ensued, M. Dupuytren did not omit to distend the wound with the tampon, of the manner of employing which, I shall presently give a description. After this apparatus had been applied, the lad was sent to bed, and for some days seemed to confirm the favourable prognosis, which had been before given; for no unpleasant symptoms presented themselves. Such a satisfactory state of things was not however of long duration, for he was soon seized with an anomalous train of symptoms, which, as they were extremely perplexing at the time they took place, are now no less difficult, even imperfectly, to describe. From the general aspect of the patient, there was no difficulty in at once

perceiving that something was going on badly: there existed a general sinking without any individual symptoms which could be looked to as indicative of mischief in any particular part of the body, and least of all in the part that was exclusively affected. M. Dupuytren saw him twice a day, and examined him at each time with his accustomed care and attention, but did not offer any conjecture of what eventually proved to be the nature of the case. The patient was watched in the same diligent manner by a great number of gentlemen, and a variety of opinions were formed on the subject, but none were mentioned with much confidence, from the extreme deficiency of symptoms. It would be unnecessary to enumerate those which the patient had not, for all that he appeared to have might be described under the terms of an irregular febrile state, with much debility, depression of spirits, and a cadaverous-looking countenance. The fatal conclusion of this negative state of circumstances took place in a few days; and an examination of the body was looked forward to by every one with great interest. The investigation shewed what no one was prepared to expect, viz. that the lad died from extensive disease in the chest, consisting in a high degree of inflammation, with effusion of lymph, and recent adhesions, which, however, during life, had not been made manifest by any of the signs usually indicating the existence of such complaints.

The sympathetic connection between local irritation resulting from wounds or surgical operations, and the respiratory organs, must have attracted attention from the earliest times, and within the last few years has been particularly treated of by Mr. Guthrie, in his Work on Gun-shot Wounds, as well as by Mr. C. Bell, in his Surgical Observations. But such disorders are, in general, sufficiently evident to be perceived by the most superficial observers. The above instance is therefore peculiar, as the disease was of so insidious a nature as to destroy the patient before it could be ascertained that it was entirely confined to the chest. Other cases do, however, sometimes happen, in which, though the diseases are afterwards found to be very marked and defined, yet, during life, the symptoms attending them are so mild or obscure as to be insufficient for the foundation of a correct diagnosis. The heart and the brain are the organs in which such anomalous complaints are most often found to have had their seat, but I could mention other situations where the same thing also happened, if it would not draw me into a longer digression than would at present be admissible.

The third case which I shall relate occurred at the same Institution, and under the same highly enlightened surgeon as that

above mentioned. The operation was done on the 21st of February, 1820. The subject of it was a man in whom, besides the stone, there was a fistula in perinæo: the exact course of this was not ascertained by the introduction of any instrument, but it is not improbable that it went towards the prostate gland, as it seemed to be comprehended in the wound made for the extraction of the stone. In sounding the patient, M. Dupuytren made the observation, that before the sound had completely entered the cavity of the bladder, the calculous matter by its roughness was very perceptible to the fingers which grasped the instrument. After the man had been secured in the ordinary manner, the operator began by making the incision, as usual, through the integuments, fat, transversalis peronæi, and part of the levator ani, in a direction towards the membranous part of the urethra. When he had exposed this part of the canal, and was about to proceed to the division of the side of the prostate gland and neck of the bladder, he found that his progress was arrested by having arrived at the stone, and discovered, as he had before suspected, that the true nature of the case was that of impaction of the calculus within the substance of the prostate gland itself. The stone did not seem to have been situated merely in the prostatic part of the urethra, but, for several reasons appeared to have its origin and growth in the cells of the prostate gland. In the first place it seemed firmly adherent to the surrounding parts, and not to be separated and extracted without great difficulty to the operator, and great uneasiness to the patient. Besides, it was composed of four or five distinct portions, some of them with partitions of the gland between them, that required to be divided with a scalpel, before the fragments could be so exposed as to be easily included between the blades of the forceps. They were also remarkable on account of their colour, being of a deep brown hue, resembling the other specimens of prostatic stones, which are sometimes seen in anatomical museums. Some of them had been in contact with each other, as was shewn by several elevations and depressions corresponding to those of others; some parts of them exhibited polished surfaces, and the whole, when collected into one mass, would, as nearly as I was enabled to judge, have equalled in dimensions a healthy prostate gland. The operation of extracting them, as may be easily imagined, was very tedious, and great violence must of course have been done to the already preternaturally distended prostate. The patient, however, did not experience any ill effects from such rough treatment, but soon recovered so as to be able to walk about the Hospital.

I do not know whether the stone was analyzed, but as all

those of a similar kind have been found to consist of neutral phosphate of lime, with some colouring matter, nothing but this last step was wanting to set its nature beyond all doubt, and to prove that the case was one of very uncommon occurrence.

The last operation at which I was present, suggesting any practical remark, was performed at one of the hospitals of Paris, on the morning of the 5th of May, 1820. In this instance, the stone had for its nucleus a portion of the shaft of a tobacco pipe, which the patient had by some means introduced into his bladder. For the division of the prostate and neck of the bladder the lithotome cachée was employed; immediately after which, the attention of those present was attracted by the severity of the hemorrhage which followed. The blood streamed out in a full current, so as to be distinctly audible at the furthest end of the apartment, which is very capacious, and comprehends a space of between twenty and thirty feet, as nearly as I could guess. What artery was divided could not, as will presently appear, with certainty be ascertained; but the bleeding was to such an extent, as apparently to confirm what the operator afterwards said, viz. that it was possibly the trunk of the internal pudic artery. The patient did not, however, faint with loss of blood, before the wound was plugged with the tampon. This consists of a silver or gum elastic canula, surrounded with a small linen bag, in such a manner as, when the latter is distended with lint, to produce and maintain firm pressure on all the parts divided in the operation. The tube is about five or six inches in length, terminating at the extremity which is introduced into the bladder, by a cul-de sac, and pierced with a double eye; at the other extremity, which protrudes externally from the wound, it is quite open. It also has a groove on its outside, at about half an inch, or an inch from its inner end; the bag is rather longer than the tube, and should be of such dimensions as a little to exceed in size the opening through which the stone is extracted from the bladder. A small hole is made in the middle of the bottom of this bag, the grooved end of the canula is passed through it, and the linen at that part is fastened securely to the groove. The same extremity thus surrounded with the bag, is passed into the bladder : dossils of lint are next introduced into the bag, till the distension of the wound is sufficiently great to arrest the hemorrhage. But although this can be carried almost to any extent, the urine of course finds a free exit from the bladder through the tube, which is included in the centre of the apparatus.

After the application of the above described apparatus, the blood no longer continued to flow, and the patient was therefore

sent to bed in his ward. By this time it was about ten o'clock in the morning, and I saw nothing of him till seven *p. m.* at the evening visit, which, to the great credit of those who regulate the Parisian hospitals, is made by the principal surgeon every day, without any omission whatever. With the other more severe cases, and the accidents which had come into the hospital during the day, this man was also attended to. The surgeon found that the hemorrhage had returned, and besides several folded sheets that had been completely wetted through by a constant dribling, which had penetrated the closely impacted tampon, a discharge of florid blood was still continuing by rapid drops. He immediately endeavoured to put a stop to the blood by trying to introduce more charpie or lint, into the linen bag, but although it was now very forcibly distended and exerted, great pressure on all sides of the wound, the blood escaped almost in a stream. Under these serious circumstances something more was evidently required to be done, and as there was little chance of success in applying a ligature on the divided vessel, directions were given that the cautery irons should be heated white hot as soon as possible. These directions were promptly obeyed by the pupils, who, by means of a small charcoal fire, well plied with a pair of bellows, succeeded in preparing the irons for the application of the actual cautery in about ten minutes. During the interval, the surgeon continued to support the tampon, and the additional quantity of charpie which he had applied over it, till the irons were sufficiently heated. His mind seemed to be occupied with nothing but the application of the cautery, when, after having withdrawn his attention for a few minutes from the bleeding, and again looking for it at the end of that time, he was agreeably surprised by finding that the blood which was about the external parts, and that which had escaped into the interstices of the charpie, by its coagulation, had afforded an effectual obstacle to the continuation of the hemorrhage. He now therefore, for the present at least, abandoned the idea of cauterizing the part from whence the blood issued, and contented himself with placing an additional quantity of charpie over the tampon : he also fastened a roller round the middle of the man's body, and carried another between his legs, over the apparatus, so as to prevent its being deranged by the motions which he might make in bed. When he had particularly enjoined that the man should be constantly watched, he left the Hospital. No recurrence of the bleeding afterwards took place, nor did any other unpleasant occurrence happen to retard his recovery. On Wednesday, the 10th May, the tampon was withdrawn, and in three weeks or a month afterwards the man was quite well.

The anatomical investigation of the parts interested in the lateral operation of lithotomy, certainly shews that if it is performed according to the best established precepts, no vessel is likely to be divided which can give rise to an alarming or fatal loss of blood. This consideration, and the paucity of records of such accidents which are to be found in books, will sufficiently account for the opinion most frequently entertained, that serious hemorrhage seldom if ever occurs after lithotomy. But as in my own short and limited experience, I have twice witnessed the loss of a large quantity of blood, and as no fewer than four instances have come to my knowledge of patients who have lost their lives from the direct effects of hemorrhage after the operation, it would be unnecessary for me to say more to prove that these accidents do not occur so rarely as might be wished, and are not, as is asserted, greatly exaggerated.

As hemorrhage has also followed a much greater number of operations, several of them performed by some of the most distinguished characters in their profession, on the continent and in this country, it must be admitted that it is liable to recur on future occasions ; it therefore becomes highly necessary to consider all the means we have in our power of averting the ill consequences of such an accident. Four different modes may be particularized as worthy of attention for stopping the loss of blood after lithotomy, viz. the application of a ligature on the bleeding orifices ; the French method of compression with the tampon as above described ; compression of the vessel continually maintained with the finger; and lastly, the actual cautery. Of all these means the ligature is certainly the most secure, and the most preferable, if the chief objection to it can be surmounted, which consists in the difficulty of applying it. On this account it would be unnecessary to say, that it is the first resource to which we should recur. Whether it is applicable or not will depend in some degree on the artery divided, but chiefly on the depth of fat in the perinæum of the patient, as well as the period of life at which the operation is performed. With respect to its practicability the greatest contradictions exist in authors, and as it is doubted by some of the most eminent writers,* that it is possible in any instances to tie the main

---

* I allude more particularly to Deschamps, who, in the third volume of his Traité Historique et Dogmatique de la Taille, relates the following case :—

" Observation 231. En mai, 1795. Desault a fait, dit-on, a l'Hôtel Dieu, la ligature de l'artere hortcuse ouverte dans une Taille pratiquée avec le gorgeret d'Hawkins. Celui qui le premier me parla de cette ligature, me dit qu'aussi-tôt que Desault s'apperçut de l'ouverture de l'artere dont le sang sortoit en gros jet, il porta son doigt sur le lieu de l'ouverture du vaisseau, qu'il conduisit vers cet-

branch of the internal pudic artery, I shall here notice three instances in which it was done; two of adults, in whom there was only a small depth of fat in the perinæum, and the third in the case of a lad. The first of them was in the case of a German, which is related by Mr. Abernethy in his lectures. The operation was performed in St. Bartholomew's Hospital, by the late Sir Charles Blicke. The man was a fine muscular subject, but not fat; the operation was done well, but as soon as the stone was extracted, a torrent of blood issued forth. When he perceived this, Mr. Abernethy put his finger into the wound, pressed the pudic artery against the tuberosity of the ischium, and passed a ligature round it. From the difficulty he then experienced, he is induced to express how much he felt the necessity of having in such cases needles of pure silver with steel points, so as to be extremely flexible. The wound never went on well, it became fretful, sloughed; the man lingered, and eventually died.*

The second case occurred in London in a man of twenty-six years of age, of a spare habit, and a moderate depth of fat in the perinæum. The same knife was employed for the internal incision as that generally used under the name of Mr. Thomas Blizard. As usually happens, it was not till after the extraction of a calculus of moderate dimensions that arterial bleeding followed in a large stream, so as to produce complete syncope, from which, however, he revived when the hemorrhage was stopped by pressing the pudic artery against the bone. It was

---

endroit une aiguille courbe ordinaire, qu'il passa entre la branche montante de l'ischion et l'artère, qu'il embrassa et lia; le sang arrêté, il proceda a l'extraction de la pierre. *D'apres ce recit je niai la possibilite d'une parcille ligature.* Un temoin de l'operation me dit le lendemain que la ligature de l'artère n'avoit été faite qu'après l'extraction de la pierre, que l'aiguille dont on s'etoit servi avoit a-peu-pres dix-huit lignes de diamètre, qu' elle s'étoit perdue dans la plaie, au point qu'il ne paroissoit rien à l'exterieur; il n'y a pas de doute alors qu'elle n'eût été portée profondément."

* The case has also been noticed in the following terms :—" It may perhaps be useful to mention, that when I once saw the pudendal artery divided in the adult, the hemorrhage was so profuse as to call for some sudden mode of suppressing it; I therefore with my finger compressed the trunk of that vessel, as it passes along the inner surface of the ramus and tuberosity of the ischium. This pressure served like the tournequet, to suppress the bleeding; but on the least remission, the blood gushed from beneath the os pubis so vehemently, and from such a depth as to make it unlikely that the divided artery could be secured in that situation; I therefore tied the trunk of the vessel which I had compressed, and where it was easily accomplished, and thus effectually prevented any further loss of blood."—Mr. Abernethy—*Medical and Physical Journal, Vol.* ix. *p.* 393.

so deeply situated as not to be within sight, but after a repetition of efforts, during about two hours, was at last secured by means of an armed ligature. Although some bleeding afterwards occurred, an attack of peritonitis ensued, which called for a copious venesection, notwithstanding which, the patient recovered in about three weeks.

I was myself present at the operation which was performed in the third case of the lad : it was in the neighbourhood of London. As in the former instance, Mr. Blizard's knife was used for the division of the prostate gland and neck of the bladder. After this had been done, the operator introduced his finger into the wound, but finding that he had not made the incision sufficiently extensive to admit of the easy introduction of the forceps into the cavity of the bladder, he prolonged it to a greater extent, keeping the forefinger of his left hand in the opening, while he guided the knife with his right hand. During this time, he carried the handle of the knife considerably towards the right side, and thus inclined its edge so much to the left, as to divide the pudic artery in its course along the inside of the ramus of the ischium. The stone was soon extracted, and immediately afterwards a dreadful hemorrhage took place ; the florid blood streamed from the wound in a torrent which would have soon put an end to the patient's life, if the operator, by boldly enlarging the external incision downwards and outwards, had not gained sufficient room to succeed in securing the vessel. No more bleeding happened after the patient was removed to bed, but enough blood had been already lost to account fully for for his death, which took place in the course of a few hours.

When the body was afterwards examined, the vessel was traced, and no doubt was left that the trunk of the internal pudic artery had been completely divided, but that the orifices had also been perfectly tied with the ligature. This unfortunate case, therefore, seems of itself to set two questions completely at rest; first, the possibility of placing a ligature on the main pudic artery, when it is divided, in subjects below the adult age, in whom it is not so deeply situated : secondly, it shows the extreme danger attending the accident, although it has been thought but lightly of by some surgeons, as well on the continent as in this country. Before the conclusion of this case, I should not omit to mention, that only a short space of time elapsed between the commencement of the hemorrhage, after the stone was withdrawn, and the application of the ligature to the artery ; so that although the time was very moderate during which the orifice remained unsecured, a fatal quantity of blood was lost.

There is, however, every reason for believing, that a considerable variety exists in the size and disposition to bleed, both in the internal pudic artery and its branches, since there is the strongest contrast in the effects produced by the division of the same artery in different subjects. To exemplify this point clearly, I may mention two cases, both of which occurred in London, and in patients of an adult age. In the first of them, the hemorrhage which attended the operation was not remarked as more than usually excessive, being in quantity, as nearly as could be estimated, about two pints, and not requiring any means for controlling it, for it stopped of itself, and did not again recur. The man was afterwards seized with an attack of peritonitis, which, by its fatal consequences, afforded an opportunity of examining the parts divided in the operation, when it was ascertained that the internal pudic artery had been fairly cut across during the performance of the operation, and was the vessel which, although it had furnished some blood at the time, had not, however, produced any further alarm. Whether the difference in the age of this man, and of the lad last mentioned, is adequate to account for the great difference of the results, I am quite unprepared to decide. The other case, which may serve to illustrate this subject, happened in a man who died, not many hours after the operation, from hemorrhage; yet, on the anatomical examination of the body, it was found that the only vessel of consequence which had been injured was a branch of the pudic artery, which was distributed to the bulb of the urethra. These two cases also shew, that the quantity of blood lost at an operation of lithotomy cannot of itself be a sufficient guide for deciding on the artery which is wounded, since a harmless hemorrhage may happen from the main branch of the internal pudic artery in one instance, while in another, the division of a comparatively unimportant branch may be attended by the most unfortunate consequences.

Besides the common ligature with the curved needle, which has been generally tried for securing the divided vessels, several other methods of tying them have at various times been suggested. Instruments have been made to hold the needle so as that it might be passed above the artery, and carried behind it in the direction from above, downwards. Another proposal for the same purpose has also been made by Dr. Physic, of Philadelphia, which, from its ingenuity and simplicity, should not be passed over unnoticed. He recommends, that when the situation from whence the blood issues has been ascertained, provided the vessel is too deeply placed to be tied in the common way, that a needle should be passed through the soft parts close

to it, in a direction transverse to its course. Each end of the needle should be allowed to protrude a little out of the soft parts, so that it may be surrounded with repeated turns of a ligature, nearly in the same way as the needle and ligature used after the operation for hair-lip. Thus, a circle is made round the neighbourhood of the two bleeding orifices, which appears very likely to stop the current of blood flowing from them. This expedient is mentioned by M. Lisfranc, in his Lectures on Operative Surgery, given at Paris ; but whether it is practicable in so confined a space as that of the wound made in lithotomy, orat so great a depth from the surface, is a question only to be determined by future experience. It appears, however, to possess the peculiar advantage of being applicable even when the orifices cannot be perceived by the eye, since its influence must be exerted over a considerable extent of surface.

It is needless again to describe the method of employing the tampon, since it has already been mentioned. It is certainly far preferable to the sponge and canula, and to every other instrument hitherto invented, which acts on the principle of compression, since those till now employed have been inadequate to arrest the hemorrhage from any vessel of considerable magnitude. It is recommended by its simplicity, and possesses the double advantage of effectually compressing the divided vessel, and of preventing the accumulation of blood in the cavity of the bladder, without impeding the egress of the urine. If it should happen, when the patient is carried to bed in the moment of general spasm, and when the wounded vessel is in a retracted state, that hemorrhage should again take place from subsequent relaxation, this method of compression in the course of the wound seems to be particularly indicated. A distinction must be made between bleeding from a single vessel, which, by its abundance, affects the patient's strength, and that general oozing from the whole surface of the wound, which, although it may amount to several ounces, by the relief it affords to the too great inflammation of the surrounding parts, must be considered as having a salutary tendency, and should, therefore, by no means be arrested. The apparatus of the tampon appears to be applicable in all cases of hemorrhage, after the operation for stone, except where the blood comes from the inside of the bladder, which has happened after the extraction of incysted calculi: For such hemorrhage, if it is very abundant, this, as well as every other method hitherto proposed, seems to be quite inadequate as a remedy. Instances of the kind are to be met with in various authors, and the particulars of one case, of a

man who died from the same cause eighteen hours after the operation, are minutely related by Lapeyronie, in the first volume of the Memoirs of the Academy of Surgery.

Of the application of the actual cautery, as a means of stopping hemorrhage after lithotomy, I can say nothing from my own experience. It is the method occasionally resorted to by the French surgeons, in cases where the tampon does not appear to be effectual in stopping the blood: it is also employed by them after the extraction of the stone, when the extreme pressure of the foreign body and the violent action of the forceps have involved in general confusion all the parts of the wound, and the blood, by escaping in a continued and diffused stream, renders it impossible to discover the vessel from whence it issues. In this instance, when the ligature is impracticable, although the orifice may be within view, M. Dupuytren has proposed to direct to it across a canula, which protects the rest of the wound, a small cautery, heated white hot. This means seems to possess the advantage of being applicable when the artery, by the extreme depth of fat in the perinæum, is so far removed from the surface as to render the application of the ligature a matter of perfect impossibility; and to whatever extent the orifices of the divided vessel may have retracted, it appears that they can never elude the influence of such an antidote against bleeding. From being unacquainted with any cases of its application after lithotomy, I am not able to say what are the chances of the recurrence of hemorrhage, or the subsequent danger of inflammation, either of the bladder or the peritonæum. But from having witnessed the application of the actual cautery, on several occasions, to vessels of larger magnitude than the pudic artery, I cannot withhold my testimony in its favour, as a means highly efficient for the permanent suppression of such hemorrhages as are furnished by vessels out of the reach of ligatures, from being placed between two bones, as in the instances of the communication between the radical artery and the deep palmar arch in the hand; or the junction of the anterior tibial artery with the plantar arch in the foot. It might also be used where the vessel and the surrounding parts have been so violently contused as to preclude the possibility of tying the former, since it may happen, that the tampon may fail in stopping the stream of blood, and the ligature may also be impracticable; except the actual cautery, there is no other alternative remaining but the constant compression of the artery with the fingers of the assistants, till the bleeding ceases, or the remission of the pressure. A case, in which this mode was had recourse to, is related by M. Lisfranc, in his Lectures on Opera-

tive Surgery. He himself was one of four who maintained the pressure on the divided vessel. It was necessary to continue the compression for many hours before the bleeding was permanently suppressed; this was, however, at length effected, and the patient ultimately recovered.

ART. VI. 1. *Geschichte eines glücklich geheilten Morbus Maculosus Hæmorrhagicus Werlhofii. Von Dr. Marquett, Königl Regimentsarzt im 27sten Infanterie Regiment zu Magdeburg.*

History of a successful Case of Purpura. By Dr. Marquett, Surgeon to the 27th Infantry Regiment, Magdeburg.

2. *Einige Fälle des Morbus Maculosus Hæmorrhagicus Werlhofii. Mitgetheilt von Dr. L. A. Struve, Praktischem Artze in Elmshorn.*

Some Cases of Purpura. By Dr. L. A. Struve, Surgeon in Elmshorn.

THOUGH this disease has for some years been made known in this country, and many cases of it have, from time to time, been published, the facts collected are not sufficient to afford any general inference respecting its nature, or the requisite mode of treatment. Accordingly we find many practitioners of the present day, either not acknowledging it as a separate form of disease, or if they do so, content to treat it in the same manner as those diseases which it most resembles. This is not much to be wondered at, when we consider that almost all the authors who have written on the subject have confounded it with other diseases, and more particularly with scurvy. Even so late a writer as Dr. Willan did not distinguish it from that disease, for after describing it, he says,* " It must undoubtedly be considered as a branch of the true scurvy." Dr. Parry, of Bath, and Dr. Bateman, were among the first to point out its distinct nature, and separate mode of treatment.

There are many circumstances connected with it, which are quite sufficient to establish an essential difference in its origin and nature from those of scurvy. It occurs occasionally, in its

---

* Reports on the Diseases in London, &c., p. 92, 93.

severest form, in persons apparently enjoying perfect health, living in the country, with all the necessaries and comforts of life. Several cases are recorded, in which the eruption was discovered in the morning, the patient having been in perfect health the day previously. Other instances are mentioned, of sudden death from profuse hemorrhage.* With respect to the treatment, the distinction between the two diseases is quite as marked, and of the greatest practical importance. The same remedies and diet which remove scurvy almost infallibly, have been abundantly taken in this complaint without the slightest effect.† On the contrary, means which would be prejudicial or fatal in scurvy have been of the most beneficial use in purpura.‡ These and other circumstances, such as its more frequent occurrence in children, the constitutional symptoms, &c. seem satisfactorily to show what the disease is *not:* what it *is,* must be left to be determined by future writers, when more cases and facts relating to it have been collected.§ In the present state of our knowledge respecting it, every case is of importance, particularly if it differ in any circumstances from those previously published. These considerations induce us to give an account of the cases and observations before us, to which we now proceed. The first case, by Dr. Marquett, considering its importance, we shall offer no apology for giving at full length.

Frederick Thoms, aged twenty-three, a robust and healthy soldier, was affected in the autumn of 1819, with angina rheumatica, at that time prevalent. This went off, but returned on the 14th of November, with increased violence. He had pains

---

* In one case which we witnessed, in a boy of five years, hemorrhage from the nose destroyed the patient in five days. He was suddenly seized with the disease while in good health.

† See a case in Dr. Bateman's Inaugural Dissertation, which was related to him by Dr. Duncan.

‡ Observations on the Utility of Venæsection in Purpura. By Dr. Parry. Edinburgh Medical and Surgical Journal, Vol. 5.

§ In April, 1821, a Memoir, by M. Mouton, was read to the Royal Academy of Medicine at Paris, on Purpura, containing four cases, with observations, in which the author establishes the complete distinction between this disease and scurvy, and supposes it to belong to the class of Petechial Fevers. This is rather remarkable, when we consider that the names universally adopted, till the time of Dr. Willan, were all expressive of the absence of fever. Thus the " Petechiæ *sine Febre*" of Dr. Graaf; " Morbus Pulicaris *sine Febre*" of Amatus Lusitanus; " Purpura *Apyreta*" of Cusson; " Maculæ Nigræ *sine Febre*" of Pezoldus and Zwingerus.

in his back, and stiff neck. After keeping his room for some days, and using gargles, liniments to his neck, foot-baths, inhaling vinegar steam, taking elder tea, &c. on the 18th the right tonsil ulcerated, and a discharge of pus and blood was the consequence. He now swallowed without obstruction, and felt tolerably well. In the evening he spit out more blood mixed with saliva, but without pus ; the inflammation of the tonsils, and the swelling had much diminished.

November 19.—The patient had been very restless during the night, had frequently spit blood ; the pain in the back had increased. On the tongue, and inside of the mouth, were seen spots of the size of a pea, and feeling elevated to the touch, from which a thin, dark coloured blood trickled into the mouth. Spots of different sizes and colours, some red, others brown, were seen on the face and neck, and appeared elevated. These symptoms rendered the admission of the patient into the Garrison Hospital necessary. In the evening the disease was evidently gaining ground ; with a full, hard, but sometimes unequal pulse, the countenance became collapsed, the strength sunk, and the patient lay in a passive and unconscious state.

From an excoriated spot on the right side of the tongue, of the size of a sixpence, a black and thin blood trickled continually ; and the same was observed, though less plainly, in many parts of the mouth, particularly on the right tonsil and the hinder fauces. Astringent gargles, volatile liniments to the neck, and foot-baths availed little ; for during the night the bleeding was so profuse, as to excite anxiety for the patient's life. These remedies were exchanged for local applications of diluted sulphuric acid, and cold applications externally. The pulse, before hard, became very small, and sometimes weak ; its irregularity was very striking, the number of beats in a minute fluctuating between seventy-eight and ninety-four. The patient had already spit about three pounds of a fluid, consisting of serous blood mixed with much mucus, and nature seemed to have made a pause, when at three in the morning a new and very profuse discharge of blood from the mouth and fauces occurred. The whole fluid, blood, mucus, and saliva, might amount to five pounds. Cold washes, and a solution of alum and common salt, were applied to the head. The patient slept a quarter of an hour, but the accumulation of blood excited coughing, and disturbed him.

November 20.—About seven o'clock he felt a desire for food. The spots now occupied the surface of the whole body, were of different forms and sizes ; the colour of them also varied: some were red, others brown, and others black. One very black spot

on the left angle of the mouth was much elevated, and after three days fell off like a coagulated scab, and left a mark of a bright red colour; they felt quite circumscribed, and the skin apparently elevated, was harder than elsewhere. The pulse was small, and at times wiry; the extremities were cool. Though lumps of clotted blood were often thrown out, the breath was not ill-scented. The urine was of a dark red colour, and was passed with pain. About eleven at night the patient fell into a refreshing sleep, but was soon again disturbed. The internal treatment consisted of Dec. Cinch. Tinct. â Gent. C. et Sp. Armor. The diet, of wine, beef-tea with yolk of egg, alum whey, and barley-water for drink. During the night his sleep was only a few times broken by coughing. There had been no discharge from the bowels, but the urine was constantly mixed with much blood.

November 21.—The appetite returned, and the patient took some broth, and to relieve the thirst, alternately wine, lemonade, and alum whey. The number and size of the spots increased, and they extended to the lower extremities. The long protracted constipation, rendered necessary in the evening a clyster of Inf. Chamæm. with oil and salt, which was followed by a large discharge of fæces mixed with blood, partly coagulated, and partly fluid; at the same time a copious flow of blood took place from the mouth and nostrils, from which last, fluid blood had trickled during the whole day. Probably also some of it had been swallowed, and had collected in the stomach, for in subsequent vomiting a considerable quantity was expelled. The pulse was accelerated, hardish, tremulous; the respiration somewhat difficult. The spot over the left eye became larger, darker coloured, and had the appearance of a severe bruise. Under the use of cold applications to the head, and the internal administration of diluted Sulph. Acid, combined with orange juice, the bleeding yielded somewhat, but still continued in a less degree till morning. The region of the bladder and the termination of the urethra were affected with pain, and the urine, which was dark coloured and bloody, deposited after some time a small quantity of a dark sediment.

Nov. 22.—The patient was tolerably well all day, but the extraordinary mutability of the pulse, which within a few minutes was irregular, small, large, &c. required an alteration in the treatment. He now took Infuso-Decoct. Valerian. et Cort. Cinch. c̄ Sp. Armor. and Æth. Sulph. every two hours; and for diet, beef-tea, steamed apples, wine, oranges, lemonade, and alum whey. In the evening, the bleeding from the nose returned; the patient lay with his eyes half open and fixed, quite uncon-

scious of every thing; sometimes falling into a death-like slumber, and then again starting from it. He remained in this state during the night, till, in the morning of the 23d, a soft refreshing sleep revived a little his sinking strength. A clyster administered the day before brought away some stools, which were mixed with blood. The urine lost its bloody colour, and the spots assumed a brighter appearance, and felt like hard points and stripes on the skin. The spot on the tongue, whence the blood had been observed to flow, was uncovered by epidermis, and the papillæ projected like white marks on a dark ground. The right tonsil appeared spongy, and in many places shewed similar excoriations, which were covered with black blood.

In the evening a slight shivering was observed, and was accompanied by an acceleration of pulse, but without hemorrhage. Ten drops of a solution, consisting of half a dram of camphor, and one dram of acetic æther were occasionally given. The patient shewed no desire to eat or drink, and after the administration of a clyster, lay in a comatose state; out of which he occasionally roused himself with complaints of great debility, giddiness, pains in all his limbs, and especially of an uneasiness, the seat and cause of which he could not describe. This state continued all the following day, with little improvement. The spots assumed more and more the colour of the skin and were only observable in some places. The same medicine and diet were continued, and in the evening a clyster administered, as the one on the previous day had produced no effect. The appearance of the patient on the 25th November, and the continued decrease of all urgent symptoms, rendered a favourable termination of the disease presumable. The patient now ate and drank with a good appetite, slept many hours uninterruptedly, with a quiet regular pulse, and complained of nothing but debility.

November 26.—The medicines were continued as before, except that the solution of camphor was given less frequently. The improvement in the patient's state was now evident. The earliest of the spots had almost entirely disappeared, and the latter ones were of a bright red colour. Towards evening a slight bleeding from the nose occurred, but without any unpleasant consequences. The pulse was quiet, and the patient slept well.

On the 1st of December, the improved state of the patient allowed of his sitting up all day. He now took, instead of the bark, Aq. Menth. Pip. c̄ Ext. Gent., Sp. Armor. et Æth. Sulph. His diet was of the most nutritive kind, and his strength increased daily. On the 17th he walked out, and in the beginning

z 2

of January left the hospital quite well, and able to perform his accustomed duties as a soldier.

Dr. Marquett in his remarks on the preceding case, after noticing the opinions, &c. of several physicians on this form of disease, observes, " Von Jaeger considers the morbus mac. hæm. Werlhofii as merely a modification of scurvy, and thinks that depression of mind and bad living are the most powerful exciting causes. In the instance before us this was certainly not the case ; for the patient was well till a few days before the attack, and was one of the strongest and stoutest men in his regiment. After his recovery his health was remarkably good ; it is true he had in March a slight sore throat, but this disappeared in two days."

Dr. Willan asserts that the spots are not elevated, but Dr. Bateman refers to a few cases, in which the cuticle was raised into a sort of vesicle, containing black blood.

The first case mentioned by Dr. Struve, occurred in a woman about thirty, and the disease was confined exclusively to the mouth. The tongue, and the internal lining of the cheeks were much swelled, and from the cavity of the mouth fluid blood almost constantly flowed. The right side of the tongue, especially at its edge, and the inside of the right cheek were constantly covered by a thick coat of coagulated blood, and on removing this, the part from which the blood proceeded appeared livid and corroded. Of the origin of the disease the patient could give no account ; but as she was in very indigent circumstances, Dr. Struve considers bad living, want of cleanliness, and damp air (her dwelling being in the immediate vicinity of stagnant water) as the causes of it. With the exhibition of a strong decoction of bark and sulphuric acid, and the application of lotions, consisting of decoct. quercûs cum acid. muriat. to the mouth, the patient recovered in fourteen days.

Of this case Dr. Struve observes, that, although petechiæ were altogether wanting, he considers himself warranted in referring it to purpura, because all the symptoms of scurvy, with which alone it is likely to be confounded, were absent.

The second case is that of an old man, of more than fifty, a tradesman of Horst, a village distant a mile from Elmshorn, who had been an intemperate liver before the appearance of the disease. He had been ill for about a year, and under the care of another medical man, when, on the 4th of January, 1817, he applied to Dr. Struve, with a livid spot, of the size of a dollar, on the back of the right hand, and some others on his arms. He had been subject to hemorrhage from the nose every week : it

came on by degrees, lasted about twenty-four hours, gradually ceased, and for some days afterwards a dirty fluid issued from the nose. The blood discharged was very thin, and of a dirty red colour. On the day previously he had had hemorrhage to a great extent; the pulse was small, and there were no febrile symptoms. A light vegetable diet was recommended, with acidulous fruits and fresh greens. To prevent a return of the hemorrhage the nose was plugged with lint dipped in diluted sulphuric acid, and Dec. Cinch. c̄. Acid Phosph. et Syr. Cinnam. given internally.

January 8th.—The hemorrhage returned, and in the evening, when Dr. Strüve saw his patient, a serous fluid trickled pretty copiously from both nostrils. The quantity of acid, both internally and externally used, was increased. The trickling continued till the evening of the 9th, when it nearly ceased. The medicine was changed for Dec. Cinch. c̄. Acid. Sulph., Alumin. Rup., et Syr. Cinnam. secund. quaq. hor.

The hemorrhage continued to return every two or three days, and the quantity of acid and alum was increased as often, till the 24th. At that time the spot on the hand, as well as those on the arms, had disappeared, in the place of which there were some new ones of the size of a pea; whereas before, the spots were not unfrequently of the size of a dollar, and numerous. The mixture (the proportions of which were now two drams of strong sulphuric acid and five scruples of alum, to eight ounces of decoction of bark) produced griping, and was not further strengthened.

February 1st.—The hemorrhage had not returned, the spots on the arms were gone, but a few were found on the legs. The quantity of acid was increased. On the 22d the spots disappeared.

March 12th.—After a fit of anger the patient had violent hemorrhage from the nose, but it was suppressed towards night by the use of the plug dipped in sulphuric acid. He now took a dose of a mixture consisting of Dec. Cinch. ℥ ix c̄. Acid. Sulph. Concent. ʒ üfs. Alum. Ə vij et Syr. Cinnam. ℥ j, every two hours.

On the 19th of March the hemorrhage again returned, but by the same means was stopped, and did not recur for three months. The spots very seldom made their appearance. The patient now thought himself well, and contrary to all advice, indulged in every kind of food, the consequence of which was a return of hemorrhage on the 25th of June : this yielded to the use of acid drinks, &c.

August 25th.—A large spot appeared on the right thigh, and as this was considered as the forerunner of hemorrhage, the

mixture, till now omitted, was again given. The hemorrhage, did not, however, occur, and the patient remained free from it, as well as from the larger spots, (small ones appeared from time to time,) until the 8th of March, 1818, a space of more than eight months.

In the night of the 7th of March the patient had an attack of sanguineous apoplexy, brought on by anger and vexation, which, notwithstanding the most active means were employed, terminated fatally in the afternoon of the 8th.

The third and last case which Dr. Struve relates is in many respects interesting.

In the night of the 30th of March, 1818, Dr. Struve was sent for to a man of fifty-five years of age, a brandy-maker. The message was, that he had had a decayed tooth extracted in the afternoon, and that ever since, the socket had bled continually, and to such an extent, that the patient had fainted twice, and fear was entertained for his safety. He was a corpulent man, much addicted to the drinking of brandy. As the road to the village where the patient lived was not passable at night without great danger, on account of the marshes, Dr. Struve gave the messenger some sulphuric acid, diluted with three parts of water, and directed a plug dipped in this to be introduced into the bleeding cavity. In the morning he learnt, that soon after the application of this, the bleeding stopped, and, with the exception of debility, the patient found himself well.

Dr. Struve heard no more of the patient until the 27th of July, when he was again sent for to him. He found that soon after the extraction of the tooth, he had become jaundiced, but that nothing had been done for him. He was very weak, and could not go about. His pulse was slow and full; he had no febrile symptoms; his digestion was impaired, and he had not so much desire for brandy, which was before his favorite liquor. The colour of the conjunctiva, and of the whole skin, was a dark yellow, and on the latter there was a multitude of very small, dark-blue coloured petechiæ. The tongue was coated white, and the stools light coloured. The patient had also an umbilical hernia of the size of a fist, which, however, gave him no uneasiness. The skin covering this, was also dark-coloured, and petechiæ were seen on it. A diet consisting of vegetables, eggs, light meats, &c. was recommended by Dr. Struve. The moderate use of brandy was allowed, and bitter decoctions, with Ext. Tarax, Sp. Æth. Nit. and Syr. Aurant. given.

These means were continued, without effect, till the 2d of August, when Dr. Struve was suddenly called to the patient,

who, they said, was bleeding immensely from his belly. He arrived about three hours after the commencement of the attack, and found the patient lying on his bed dressed. On removing his clothes, the belly of the patient, and his thighs, as low as the knee, were seen to be covered by a coagulum thicker than a thumb's breadth, " so that it might be truly said of him, that he was bathed in his own blood." From the region of the umbilicus a stream of blood constantly issued. Dr. Struve removed all the coagulum with a sponge, in order to discover the source of the bleeding, and then observed, on the upper edge of the hernia, close on the furrow surrounding it, a round spot, about three lines in diameter, with the cuticle abraded, from the whole surface of which, as from a small sponge, the blood flowed. The blood discharged before the arrival of Dr. Struve, had a dirty red appearance; and amounted in quantity to about four pounds. By the long continued application of concentrated sulphuric acid, by means of a pencil, the hemorrhage was at length arrested. The patient was free from fever, but felt much weakened from the loss of blood. The pulse was small, and the mental faculties unimpaired. The moderate use of good old wine, together with diluted sulphuric acid, was directed.

On the 4th of August the patient's state had become much worse. The colour of the skin had become darker, and petechiæ were very abundant on it : the spot on the umbilicus had not again bled ; but the patient was more debilitated : he began to feel a sensible decrease of his mental powers ; was stupid, and, at times, delirious. Decoction of bark, with sulphuric acid and æther, was given.

On the 5th of August a little bleeding from the umbilicus occurred, but ceased spontaneously. In the night a strong diarrhæa came on, by which nothing but a dark bloody water was discharged ; and on the 6th of August the bleeding returned to some extent. Nearly half a pailful of the bloody fluid was discharged, per anum, during the night. The bleeding was stopped by sulphuric acid. The patient felt much exhausted, was only half sensible, with a small, weak pulse : the skin was of the same colour as before, and covered with many small petechiæ. He took Dec. Cinch. ē. Acid Sulph. Alum, et Althæa ; but, as might be expected in so desperate a case, without effect. The patient, with continued diarrhœa and gradual decrease of the bodily and mental powers, and at last with delirum, died on the following morning.

The occurrence of hemorrhage from the external surface is

rather unusual. A case somewhat similar to this is mentioned by Dr. Willan.* The patient was a labouring man, about fifty years of age. Blood was not only discharged from the nose, mouth, and fauces, but issued in large streams from under the nails of his toes ; from small hard vesicles about the throat, externally; also from similar vesicles on the scrotum, thighs, and other parts of the body.

It was observed by Dr. Willan, that purpura occurs more frequently in children than in adults. The observations of Wichman and Vogel led to the same conclusion ; but Dr. Struve has not seen the disease in children at all. He mentions his having seen cases in which the lips of ill-fed children were parched and inflamed ; and on any motion, as sucking, crying, &c. cracked and discharged blood, often in some quantity ; but in these the blood was always of a bright red colour, and not dirty coloured as in purpura. Dr. Struve always found the blood of a dirty red colour, like bloody water. This was observed by Dr. Garnett :—" The appearance of the blood is very different in this disease and in the scurvy ; in the latter it is of a deep dark colour, approaching to black. In this disease the blood is very pale, and seems not to contain the usual quantity of red globules."†

Art. VII. *Pratique des Accouchemens, ou Memoires et Observations choisies sur les Points les plus importans de l'Art. Par Madame Lachapelle, Sage Femme en Chef de la Maison d'Accouchement de Paris.* Paris. pp. 498. 8vo. 1821.

The work, of which the title is prefixed to this article, is one to which we have nothing similar in this country. It is the production of a female practitioner, placed by public authority in a most important official situation, and is no less deserving of notice from the rare occurrence of such publications, than from the just views and accurate criticisms contained in it, on the state of the science on which it treats. But these are subjects on which it is not at present our intention to dwell, as we are inclined rather to take the opportunity of pointing out the state

---

* Reports of Diseases in London, &c. p. 167.

† A Case, &c. Memoirs of the Medical Society of London, vol. 4, p. 240.

of public instruction in this science in France, and to contrast it with the deficiency in this point, which all must admit and lament as existing in this country.

From time immemorial, the only asylum afforded by the city of Paris, to puerperal women, was a miserable ward in the Hôtel-Dieu; a principal midwife, with five or six pupils, whose studies lasted but for three months, ill suffieed for the number of births which occurred. The place was still more inadequate; the women admitted were heaped together, and commonly several lay at the same time in one bed. These inconveniencies were of so serious a nature as to attract the attention of the government. In the year 4 of the Republic (1797), the National Convention decided on building a house for the particular purpose of receiving parturient women.

Madame Lachapelle, in conjunction with her mother, the principal midwife of the Hôtel-Dieu, was charged with the direction of the service of the new institution. The dispositions for the arrangement and order of the whole establishment were formed in concert, and it is thus that the plan originally laid down has been more extensively applied. The number of pupils as midwives has since gone on increasing, as well as the number of individuals admitted. The former at present amount to one hundred and twenty or thirty annually. This increase, as well as the organization of the school, was owing to M. Chaptal, then minister. M. Baudelocque was then made professor, and assisted to render the work more perfect. M. Dubois, who succeeded him, has preserved the order adopted by his predecessor, which we proceed to describe.

The pupils admitted at the School of Midwifery are expected to employ themselves as well with the relief of the patients as with their own personal instruction: such, in fact, is the principal object in view. This necessity forces them to a practical study, to which, in particular, they are indebted for their acknowledged superiority over the pupils of every other school. All pass a whole year at the Hospital; and about a fourth part of their number, twice this period, serving in the second year to direct the new pupils. The newly arrived pupils are separated into as many divisions as there remain old pupils who double the period of their stay. These last direct the division entrusted to them, assist at simple labours, and point out to their companions the particularities of examination, &c.

The patients admitted are first examined by the principal midwife, who rejects or retains them according to circumstances. The period fixed is the end of the eighth month. Simple deliveries are all performed by the pupils, in the presence of the

division, and under the direction of the elder one, who serves as chief. Each pupil has the subsequent care of the woman whom she has delivered. On the occurrence of the least difficulty the principal midwife is called in. If the use of instruments should be required, it is she who operates ; if the delivery be difficult, although the hand alone suffices, she still has the charge of it ; but easy manual deliveries are terminated, under her inspection, by one of the old pupils, so that almost all have, before the end of their second year, performed an artificial delivery. Very complicated cases, such as require the use of a cutting instrument, call for the presence of the professor.

Peritonitis but too often prevails in the wards : a host of other diseases may also attack parturient women. It is then that, after being carried to the Infirmary, they are entrusted to the care of the experienced and learned Professor Chaussier, principal physician. Under his inspection, several female pupils note daily, and with most scrupulous exactness, the symptoms, periods, termination of the diseases, and the effects of remedies ; they thus become accustomed to recognize danger, to prevent it, and if not to remove it, at least to have recourse early to the assistance of medicine. Three times in the week the professor explains the theory of the science of midwifery. A lecture is given every day by the principal midwife ; and a similar one by Mademoiselle Hucherard, for eight years acquainted with the principles of the art, and honoured with the title of principal pupil, who also excercises the others on the model, in the use and application of instruments.

Amongst the old pupils, those who have most facility in expressing themselves, and capacity for instruction, are charged with giving repetitions to the new comers, of the lectures of the professor, the midwife, and principal pupil. These instructors, it is true, are not exempt from errors ; but these are soon rectified by the work of Baudelocque, which they have before them. Amidst all these attentions to the principal object, the acquisition of accessory knowledge is not neglected. Under the direction of the principal physician, the apothecary lays down to the pupils the general principles of botany, and makes them acquainted with the most important plants and drugs. In the same manner the student in medicine attached to the institution makes some demonstrations on general anatomy, on that of the viscera, on the principal functions, on the muscles of the abdomen, and lastly, on vaccination and venæsection. For these two operations the instructions are not solely theoretical ; the pupils bleed and vaccinate as often as there is an opportunity, but always before the student in medicine. Such are the

means of instruction presented to the pupils in midwifery; the wisdom of the administration has added useful encouragements. At the end of each scholastic year, several prizes are given by competition, on subjects relating to the science of midwifery; the principal is a golden medal : prizes are also given for clinical vigilance, the observation of patients, the study of botany, and for vaccination.

It is a circumstance perhaps only to be understood by the consideration of the inconsistency of human proceedings, that while laws and regulations were early devised for the protection of the public from the pretensions of the ignorant and unprincipled in the practice of medicine and surgery, midwifery, a science connected as it is with the tenderest feelings and best interests of society, should be left in the hands of the lowest and most uninformed people, at least, as far as regards the great mass of the public in every country. Nor has this delusion been confined merely to the careless and indifferent observer; even those whom their abilities might have been expected to have exempted them from the errors of common minds, seem but too often to have thought, that information on difficult and complicated subjects might be acquired, as it were, intuitively; and that mechanical, unobserving experience, might supply the defect of early and well grounded instruction. It needs but little either of intellect or inquiry, to see at once the fallacy and absurdity of such an idea.

We are aware that at the present period, in this country, a considerable portion of the practitioners in midwifery, are individuals whose compulsory professional education may be fairly supposed to render them adequate to the performance of the duties they undertake; but it is notorious that such is not the case with the females, on whose care and skill the lives or the future comfort of women in the lower classes of life, and in remote parts of the country, are so completely dependent. Nor can it be unknown, that in every part of the kingdom, even in the metropolis, no security exists against the ignorance of those who may choose to enter upon the practice of this most important branch of the healing art; that an acquaintance with, or course of instruction in its principles, forms no part of the qualifications required by the three corporate bodies, whose members and licentiates form the greater part of private practitioners in England. Nay, on the contrary, at least two of these are more disposed to discourage than to countenance the extension of this division of practice among their members.

But setting aside the deficiences in the education and regulation of male practitioners, and without any intention of being over

fastidious, we cannot help thinking their general and daily increasing employment an unnecessary sacrifice of female delicacy. Custom, it is true, as powerful here as in every other case, has done away with the surprise and disgust which the first proposition of such a system would be calculated to produce. But cases even now, not unfrequently occur, in which the aversion thus excited is to be overcome by the influence neither of argument nor example, and that perhaps, under circumstances imperiously calling for the assistance, which an able and experienced professor is alone capable of affording.

After an attentive consideration of the difficulties and the inconveniences we have alluded to, it surely requires no argument to convince every uninterested individual, whether professional or otherwise, of the necessity for some regulation of this branch of the profession, and of the important advantages which would accrue to the public from the organization of a class of female practitioners, well qualified for the performance of the duties they are intended to discharge.

To the institution of such a class in this country, we can see no well founded or disinterested objection, and it must be allowed that nothing seems better adapted to attain the object in view than the system which has received so ample a trial in France, and of which we have given an account. Of this at least we feel convinced, that a trial only is required to exhibit its excellence, and ensure its adoption. Should such a plan be ever put in execution, it would doubtless be most advantageous to combine its employment, as has been done in France, with the internal management of the lying-in institutions already in existence, especially in the metropolis. But here we must check ourselves, as it must be confessed, that it is much more easy to proclaim the existence of defects than to apply appropriate remedies, and as it is far from being our intention to assume a task that we hope to see in more competent hands. Similar motives prevent our entering on the subject of the regulation of the practice of midwifery, which, with the state of the art in general, is more fitted for the consideration of the legislature than the journalist.

ART. VIII. *Ricerche Mediche su i bagni a vapore e di calorico, e sulle fumigazioni di sostanze ammoniacali e balsamiche, di zolfo, di mercurio, &c. del Dott. Paolo Assalini, Membro dell' I. R. Instituto delle Scienze, Lettere ed Arti del Regno Lombardo-Veneto, e di quello d'Incoraggiamento di Napoli, &c.* Napoli, 1820. Tom. I. 4to. pp. 315.

Medical Researches on Vapour and Hot-Baths, and on Fumigations of Ammoniacal and Balsamic Substances, of Sulphur, Mercury, &c. By Dr. Paolo Assalini, Member of the Institute of Sciences, &c. Naples.

THIS Treatise is not composed solely of the observations of the author on the employment of the various baths and fumigations he has mentioned, but includes a republication of a former Treatise of his own, on the absorption of medicinal substances applied to the cuticle " Saggio medico su i vasi linfatici, 1787." His attention was particularly directed to this subject in the year 1816, by the perusal of the Memoir of Dr. Galés on the medicinal use of sulphureous fumigations in artificial stoves, and by the favourable reports of the principal Professors of the Faculty of Medicine of Paris, who were united in a commission by order of Government, at the instance of the general Council of the Administration of Civil Hospitals, for the purpose of ascertaining the merit of this measure. The consideration of this matter, convinced him of the advantages which a skilful physician might derive from the employment of artificial fumigations, as a most efficacious auxiliary measure in the cure of many acute and chronic diseases.

One object of his publication is to describe the improvements and additions which he has made in the construction of the stoves employed for these purposes. Of these, the principal seems to be, the having rendered these machines more portable, and their use more economical than those proposed by Galés, Darcet, and Decarro. He has added to the work numerous examples of the beneficial effects which have resulted from their use in his own practice in private life, and in the great military hospital " Del Sagramento," at Naples. Although so recently introduced into that kingdom, it is at the present period very generally employed and recommended by the principal professors in the capital and provinces. The author promises speedily to produce a second volume with additional observations and experiments on fumigations and vapour baths, together with two Memoirs on the use of thermal vapour baths, and on oily

unctions with artificial fumigation, as a preventive from, and cure for the diseases produced by the marshy effluvia commonly known under the name of malaria. Although written in a style of exaggeration, to be ascribed partly to the enthusiastic admiration of a favourite remedy, and partly perhaps to the national character of the author, the work contains so much interesting information, that we cannot but regret that it contains much that is superfluous and useless.

- The remedies of which Signor Assalina treats, appear to have received but little attention in this country, although the extent of their employment in France, particularly the sulphureous fumigations, in the treatment of cutaneous diseases, have been long known, and their efficacy undisputed. We are not aware of the existence of any public institution for this purpose in any part of the kingdom, and the few private ones which have been established are limited in their operation, and far from being sufficiently extended or perfect. In addition to this, where such establishments exist, the expences necessarily attendant upon their administration are necessarily so great as almost wholly to exclude the lower classes of society, for whom they are most frequently necessary, from the advantages to be derived from them.

Our country has always been distinguished for its charitable institutions, and at no period more so than the present. Without taking away from the merits of those which already exist, we are convinced that few measures would be more humane and beneficial to the community, than the formation of such establishments as we have spoken of, for the preservation of health, and more particularly for the prevention and removal of cutaneous diseases. We feel greatly assured, that support and assistance from the public would be readily given, and that an effort, a commencement, only is wanting to secure the execution of an object so necessary and so advantageous.

ART. IX. *Anatomical and Chemical Researches on a Subject, aged seven years, and affected with Chronic Hydrocephalus. By M.M. Breschet and Barruel. (From the Bulletin de la Faculté de Médecine de Paris.)*

AFTER the death of this subject, which was under the treatment of M. M. Levoux and Fouquier, the encephalon, in par-

ticular, was examined with much attention by M. M. Spurzheim and Breschet. The circumference of the head was 25 inches five lines; the distance from the root of the nose to the spine of the occiput, seven inches; from one ear to another, four inches three lines; from the foramen magnum to the vertex, seven inches. The cranium was ossified, except at the superior fontanelle, in a space extending transversely two and a half inches, longitudinally one and a quarter. The sutures presented many supplementary bones. The angle of the occiput was formed by three, a large one on the right, two small ones on the left. There was a similar bone on each side at the articulation of the anterior inferior angle of the parietal, with the ala of the sphenoid bone. The bones of the face were much less developed than those of the cranium; the roof of the orbit sloped considerably backwards; there were no sinuses; the whole height of the skeleton was about 35 inches; the ossification of the bones of the trunk and limbs was less advanced than in subjects of the same age; the spinal column presented no curvature; the dura mater and arachnoid presented nothing extraordinary, except their tension; the brain touched the parietes of the cranium, and fluctuation could be distinguished interiorly on making slight pressure. The fissure between the hemispheres was about an inch deep, and the corpus callosum elevated. The convolutions had almost disappeared in some places, particularly at the upper and lateral parts of the hemispheres; some were only half an inch, or even less in depth. The change in the convolutions was less perceptible near the fissura sylvii, between the anterior and middle lobes. The distension of the anterior lobes was very considerable, particularly in a longitudinal direction from the junction of the optic nerves to the anterior extremity of the corpus callosum. The grey substance on the exterior of the hemispheres was in general of the ordinary consistence; it was softer at the basis of the brain on each side of the median line, and particularly at the part which corresponds to the pes hippocampi, in the course of the optic nerves, around the crura cerebri, and near the corpora albicantia. The arachnoid around the junction of the optic nerves, and as low as the tuber annulare, was opaque and thickened; the cerebral nerves appeared in their natural state.

The hemispheres of the brain were in great part unfolded by 3 lbs. 12 oz. of water contained in the great cerebral cavities, and in the third ventricle. Of the two layers of substance, the exterior grey and the interior white one, were very distinct, and in some places, not more than two lines in thickness. The white substance was not softer than usual; in some places it

even appeared firmer. The parietes of the ventricles were smooth, and displayed vessels diverging from the corpora striata to the anterior extremity of the hemispheres, which were much distended. From this last circumstance, the anterior fold of the corpus callosum had a remarkable size and appearance. This mass of union, or commissure, presented a kind of second fornix; in other words, it was to the anterior horns of the ventricles, what the fornix, with its posterior crura, is ordinarily to the lateral horns, and to the anterior part of the posterior horns of the great lateral ventricles. The septum lucidum was ruptured; the edges of the opening (which was transverse, as regards the direction of the fibres in the septum) were ragged. It was the effect of violence; though it was impossible to say whether it existed before death, or was the result of the manipulation in dissection; the latter appears probable, as this part was not examined until the brain had been moved in different directions, and until the greater part of the water contained in the cavities had escaped. The corpora striata and thalami optici had their ordinary form. The separation between the fornix and thalami, or the communication between the lateral and third ventricles, was very distinct. The third ventricle was an inch wider than usual : this fact was proved by the elongation of the anterior, middle, and posterior commissures. These last parts were examined with particular attention, in order to verify some contested points, and to confirm a new idea. This concerns the prolongation of the grey mass, situated in front of the tubercula mammillaria, between the anterior pillar of the fornix and between the anterior commissure and the communication with the grey mass placed in front of the union of the accessory (Qu. optic?) nerves. It was clearly seen, that the anterior commissure is not confounded, as M. Tiedemann asserts, with the crura cerebri; but that it traversed the corpora striata towards the anterior convolutions of the middle lobes. The soft commissure formed a rounded bundle; the anterior one was three lines distant from the union of the tubercula bigemina.

The opening of the aquæductus sylvii, which communicates with the third ventricle, was a little enlarged; the canal itself, its opening into the fourth ventricle, the valve of the brain, the tuber annulare and cerebellum, remained in their natural state.

A circumstance which deserves the attention of anatomists, and which refutes the erroneous opinion entertained by M. Tiedemann, of the corpus callosum, is, that the fibres of the bundles which pass out of the thalami optici and corpora striata, spread out and traverse the convolutions before they unite in

the median line, to form the apparatus of commissures, and that they are not immediately prolonged into the corpus callosum.

Another important remark is, that the encephalon was not absorbed, not even the softest parts, as the commissures and septum lucidum. The whole encephalic mass weighed 3℔. 4oz. That of another child, of the same age, weighed 2℔. 13oz. 2drs. Thus, admitting that the mass of the encephalon may vary in different children, it may at least be said, that this head, affected with chronic dropsy, contained a medium quantity of cerebral substance, and that there had been no absorption. It is equally certain, that the cerebral organization was neither destroyed nor changed, which explains the possibility of the exercise of the functions of the organ in this disease.

The analysis of the fluid, extracted from the cerebral cavities, performed by M. Barruel, gave the following results : 1,000 parts of it consisted of—

Water	990.0
Albumen	001.5
A substance analagous to osmazome	000.5
Sea salt	000.5
Phosphate of soda	000.5
Carbonate of soda	001.0

Art. X. *Petrus Edvardus Bolzano, de Momentis Diagnosticis, quibus Phthisis Pituitosa ab ulcerosa distingui potest.* —Pragæ, 1818.

We are induced to offer to our readers a short review of the present little work on the Diagnosis of Phthisis, from the belief, that in England much is still wanting to render the nosological views of this disease complete. In the divisions hitherto made, no notice has been taken of that species of consumption, which is distinguished from the others by the mucous nature of the expectoration throughout the whole of its progress. It is acknowledged by some writers, that the appearance of the purulent sputa varies extremely in different individuals, and even in the same individual at different times; also, that its qualities may be modified without materially altering the nature or danger of the disease. By the latest authors, however, it is not noticed that patients may die of phthisis accompanied with hectic fever, without spitting any thing except

mucus, from its commencement to its fatal termination. So far from this, our first authorities have not considered any complaint as coming under the definition of phthisis pulmonalis in which purulent expectoration has not existed. The consequence is not only that the disease termed phthisis pituitosa has remained unnoticed, or, at least, very imperfectly described, but that sometimes unnecessary pains have been bestowed on drawing the line of distinction between mucus and pus, so as to deduce from thence what was supposed to be a certain prognosis in consumptive affections; although, in fact, every gradation may subsist in the properties of the matter which is spit up by the patients, from pure pus, a mixture of pus with mucus and blood, and, last of all, pure mucus. But although all these may be occasionally fatal concomitants of affections of the chest, yet they are by no means invariably to be considered as equally so; and it still remains an object of importance to recognise, and endeavour to distinguish, both in our prognosis and treatment, the various forms of the disease. Dr. Bolzano seems to be sufficiently aware of the difficulty of the undertaking, from the imperfection of our senses in such investigations, and the arduous nature of the subject, since apostemic and pituitous phthisis may be combined in the same patient, the mucus may often bear the greatest resemblance to pus, while in each instance the functions of the lungs may be disturbed, and there may often exist a correspondence in the febrile symptoms.

The author is of opinion that the phthisis pituitosa occurs much more rarely than either apostemic or tubercular consumption; it may also happen that the former variety is more frequent on the continent than in this country, and this may account for the small number of observations on the subject, which have been made in England, while several of the most celebrated foreign authors have published separate treatises on it.*

It is indeed rarely found, that the lungs of phthisical patients are undiseased, although cases of chronic catarrh must not be confounded with the present complaint. So also many cases of phthisis, coming on after pneumonia, appear to be of the pituitous kind only at their commencement, and many symptomatic consumptions, which arrest the progress of other diseases, unconnected with the lungs, are to be referred to this kind, although, if the diseases from which they were converted had

---

* Vogel, Murray, and Richter have written particularly on Phthisis Pituitosa.

continued longer, tubercular or apostemic consumptions would have resulted from the sudden change. For these reasons the phthisis pituitosa, rare as it is, must exist more frequently than is generally believed, and especially because, by the examination of bodies in the ulcerated species, it is imagined that the nature of the complaint has been the same throughout its whole course, while it is forgotten how frequently the one is converted into the other, though by the most gradual, and often imperceptible steps.

After the above general remarks, on the varieties of consumption, the author next proceeds to the explanation of the sources from whence a correct diagnosis is to be deduced. These are divided into the causes, symptoms, progress, complications, and treatment of the complaint. Every possible cause, both external, as climate, contagion, &c. and internal, as age, constitution, sex, &c. is enumerated and illustrated with the greatest accuracy and learning. Phthisis pituitosa appears to happen more frequently in women, while men are more subject to the other species. By the observations of Morton, Stoll, Richter, and others, the author is confirmed in the opinion, that intermittent fevers, terminating in phthisis, produce in most instances the pituitous form : Morgagni noticed, that general syphilitic affections have a similar tendency. Amongst the other diseases disposing to it are mentioned asthma, scurvy, scrofula, and jaundice. Hæmoptysis, the author remarks, according to the common maxim, " pus sequitur sanguinem," generally terminates in the purulent species ; but even to this rule there are exceptions. Richter mentions a case, in which hæmoptysis, produced by violent exertion, terminated in the pituitous form. Another exception, of the same kind is cited by Dr. Bolzano, which happened in a patient, who had long spit blood, and a large quantity of mucus of a sweet taste, but at last died from extreme emaciation ; the lungs were, however, found in a healthy state. Other diseases are also alluded to as being terminated in a peculiar and specific manner ; we, however, pass them by, as we entertain some doubt whether much precision can be expected on the subject, although many authors are quoted in each instance.

The next division of the work treats of the diagnosis to be formed from a consideration of the symptoms. Such symptoms, however, only are mentioned as are not exactly the same in each form. The cough in the pituitous phthisis is liable to great variations, so as for some days to be extremely troublesome, and afterwards almost to subside : it is quite the reverse in the other kinds of consumption. In the former case it is also less violent, and

more frequently deficient, than in the latter. The quantity of the expectoration is more copious when it is of a mucous than when it is of a purulent nature; and if it ceases altogether the symptoms are not aggravated, except in the latter instance. These circumstances are also spoken of by those who have written on this part of medicine. One of the best means of diagnosis which is enumerated, appears to be, that the expectoration, when the lungs are ulcerated, seldom undergoes many changes in appearance; in the pituitous disease, on the contrary, it sometimes resembles pus, and at others assumes all the characters peculiar to itself. This observation, which is very old, is particularly insisted on by Richter. Of the chemical distinctions, which are stated at full length, it would be unnecessary for us to speak, as the subject has already attracted so much attention in this country. With regard to the difference of treatment required, the author only makes the remark, that patients with the apostemic or tubercular disease will not bear stimuli. Indeed, it appears to us, that the diagnosis is more important, with a view to the foundation of a probable prognosis than with that of directing the treatment, since it is so frequently and unhappily observed, that almost all medicines, properly so called, are nearly in an equal degree inefficacious, although many new ones are continually suggested.

ART. XI. *An Account of the Climate of Nice. By M. Richelmi, Physician of that Town. Communicated by Dr. Clark.*

NICE, in the department of Provence, so called from the Greek word νικη, signifying victory, was founded in the year 340 before the Christian era, by a colony of Phocæans, who had established themselves 260 years before at Marseilles. This town is built in the form of an isosceles triangle, surrounded on the south east side by the sea, on the west by the torrent Paglion, and on the north-east it is flanked by a lofty rock, which separates it from the port, where there formerly was a strong citadel. The population of Nice amounts to 23,340 souls; its latitude is 40° 18′ 13″ north, and longitude 4° 50′ 22″ reckoning from the meridian of Paris. It is situated on the shore of the Mediterranean, in a plain extending about two leagues and a half in length from north to south, and from one to two in breadth, from east to west. Nice is surrounded by a chain of lofty mountains, in the form of an amphitheatre, which has no other opening than on the south-west, towards the sea. The amphitheatre is composed of different ranks of mountains, and the chain of those nearest to

Nice consists of Mont Boron, Mont Alban, Vinaigrier, Montgros, Pellet, Terron, and lastly of Sauterne. The second line of mountains is somewhat more lofty than the first, and situated farther towards the north, though it runs in a direction parallel to the other. Proceeding from east, in a serpentine direction, this second chain reaches to Turbie, Agger, Ferrion, St Genes, and Garope, which ends in the sea towards the south-west. The two lines of mountains are afterwards followed by a collection of boulevards, of excessive magnitude and height, which becoming more and more lofty as you proceed to the north, arrive at a vast height on the borders of Piedmont, distant thirty English miles from Nice. The mountains extending on both sides, proceed very far into the Duchy of Genoa, and on the west into the heart of Provence. In the midst of this line of the Alps, which separates the Compté of Nice from Piedmont, two mountains are remarkable for the boldness of their elevation ; these are the Col de Cornio, or Tende, 2,000 metres above the level of the sea, and the Pic de Jenestres, 2,300 metres above the sea ; and during the greatest part of the year, their summits are covered with snow.*

During the winter, the north wind most commonly prevails at Nice, but this wind must traverse the summits of the Alps at an elevation of from 2,000 to 2,300 metres, in order to arrive at Nice. The wind leaves Nice and its environs, on one side of the direction which it observes. We often, indeed, observe from Nice, when the wind agitates the wrinkled and foaming surface of the sea, that the trees on the mountains are agitated, and yield to the force of the wind ; and though all may be quite calm below, the passage of the clouds with the rapidity of lightning shews the great power of the wind on the summits of the mountains. But when the higher columns of air are violently agitated the lower ones are drawn by them in the same direction, but with a motion infinitely less rapid. The electricity, which the summits of mountains, full of metallic veins, continually attract, is another cause of powerful winds on such elevated situations ; and these having become cool on the mountain, descend upon the city below. Yet as the last line of these mountains is so elevated, and convex towards the north, not only do the winds which come from behind, find an obstacle in this elevation, but being repulsed right and left in the Duchy of Genoa, and in Provence, they do not arrive as far as Nice. The other mountains having also a very considerable degree of elevation, being convex towards the north, and separated from each other by distant intervals, open towards the east and west, but

---

* A metre is equal to 39.37100 English inches.

closed with respect to the plain on which Nice is situated, it follows that a part of the winds which have their source on the mountains, take the same direction right and left, but cannot make their way into the plain below.

The motion of the lower columns of air, which is only the effect of that of the superior ones, the small portions of winds which escape from the depressions in the chain of the mountains, or that portion of them which is formed on their summits, but not carried off in the intervals, those coming from the chain of mountains nearer to Nice, but much less covered with snow (in consequence of its being less elevated, and having hardly any metallic conductors),—all these winds are well calculated to maintain at Nice the serenity, purity, and salubrity of the air. The wind which reigns there in summer (though Nice is nearer to the mountains which are towards the east of the ellipse which surrounds it, and is decidedly exposed to the south-west,) is the east, and the most constant at this season is the south-east, which, contrary to what usually happens else-where, is there extremely salubrious, and maintains a constant serenity. The wind blows there constantly and equably, but never with violence ; it is also observed to possess the same characters even in winter, though less frequently than in the summer. Notwithstanding the exposure of Nice to the south and south-west, the effects of severe winds are felt much less from these quarters at Nice than in other countries.

Meteors, as in all other countries, are observed at Nice more towards the equinox, and are sometimes inconvenient, though they are much less so than in every other place ; as there is no situation which is so peculiar as that of Nice, and so well cal-culated to check their violence and injurious effects. The al-teration in the equilibrium of heat in summer, between the columns of air in contact with the cool surface of the sea, which is extremely deep in the neighbourhood of Nice, and that of the ambient air on the basis of the valley on which Nice is situated, causes in summer refreshing currents, which cool the atmosphere in a very agreeable manner. These currents are observed to prevail from eight or nine in the morning till five or six in the evening, from the month of June to that of October. Their course is from the sea to the continent, and at intervals they alternate with a reflux, which proceeds from the continent, or rather from the mountains to the sea. This counter-current arises in the night, is much more sensible to-wards day-break, which moment accordingly the sailors choose for their departure from the coast. The sea about Nice is ex-tremely deep, and as great depths, according to M. De Saus-sure, produce in summer the cold of the winter, and in winter

the heat of the summer, it must contribute considerably to the mildness of the situation in winter, and to its coolness in summer. As the sea is so deep, and is not agitated by perceptible tides, or powerful winds, it affords an aspect so smooth, and of an azure so beautiful and agreeable, as to arrest the attention of the traveller, as it is impossible to find any other view so interesting. The temperature of Nice, observed three times a-day, by means of Reaumur's thermometer, placed in the north, during the course of ten years, is as follows :—

	Morning.	Mid-day.	Evening.
*Greatest height	20,600	24,500	21,100
Mean ————	12,170	15,179	10,563
Least ————	0,000	4,000	0,000

The barometer placed at Nice, ten or twelve metres above the level of the sea, and also observed three times a-day during the same period of time, afforded the following general results :—

	Morning.	Mid-day.	Evening.
Greatest height	28.5.300	28,5,200	28.5,100
Mean ————	27.9,540	27.8,760	27.7,780
Least ————	27.0,900	27.0,000	27.1,100

The changes in the hygrometer of Saussure, observed for one year, three times a-day, were the following :—

Greatest height	....	73,0
Mean ————	....	60,5
Least ————	....	55,0

Rains are very scarce at Nice ; but they seldom fail to happen at the equinoxes. The month of May is very mild and agreeable; but the sky is liable to be clouded and again clear several times a-day. At the end of September it usually rains for one or two weeks, and the same occurs commonly at the beginning of November.—The state of the sky, observed three times a-day for ten years, gave the following results :—

Perfectly clear	....	4,516 days
Clear, with some clouds	....	2,154 ———
Cloudy	....	1,551 ———
Rainy	....	769 ———
Showery	................———	145 ———
Gloomy, (demi couvert) ———		79 ———

---

* This reduced to Fahrenheit's scale will be :—

	Morning	Mid-day	Evening
Greatest height	78,300	87,100	79,400
Mean ———	59,300	66,000	54,600
Least ———	32,000	41,000	32,000

The country of Nice, diversified by hills, plains, and valleys, offers a coup d'œil which is very lively and agreeable. It is divided into two parts by the Paglion, a torrent which arises in the mountains covering the country on the north, and precipitates itself rapidly, passing by the ramparts of the city into the neighbouring sea on the south. The stream of this torrent is so rapid, from its precipitous course, that it is almost without fish, and only contains in its bed an immense quantity of pebbles. The country may be considered as a vast garden of orange, lemon, citron, Siam orange (Pampelmouse), olive, &c. trees, and an infinity of other fruit-trees. The family of orange-trees is there very luxuriant, very common, and cultivated to the height of forty metres above the level of the sea. The olive-trees arrive there at great perfection, and to a considerable size. They are finer in the plains, and smaller on the mountains : those on the environs of Nice furnish the most delicious oil. The cultivation of the olive-tree is carried to the height of from 400 to 500 metres above the sea. All other fruit-trees known on the continent are cultivated in great abundance, indiscriminately or in separate orchards ; and it is easy to conceive, that the heat and great light of the situation are admirably adapted for giving the fruit the most delicious flavours and perfumes. Vineyards are to be found every where, but more particularly upon the hills ; they produce excellent wines, among which those of Mont Pellet hold a distinguished rank. Uniformity is interrupted in this country by beautiful fields of corn, which are at intervals to be met with, and by cheerful meadows, which separate the forests of orange-trees from those of olive-trees ; also by numerous rivulets of crystal water, which, springing from the fissures in the mountains, covered round by shrubs, either in sheets or running in furrows, escape, with murmurs, into the sea. We may there admire some beautiful palms, to which even Rome itself, though situated more to the South, is obliged to pay a tribute for the use of their branches.

The sugar-cane, the pepper tree, the cotton shrub, are cultivated in some gardens ; and, according to the opinion of good authorities, the pine apple would grow in the open country. In this country the aspect, at a distance, of an azure sea, brilliant from the golden rays of the sun, setting in splendour on one side, the city in front, the banks of the Paglion, embellished by willows and poplars, which are agitated by zephyrs, as well as meadows, forests, valleys, and, hills, adorned by beautiful country houses, painted in fresco on the outside ; and on the other hand, the summits of the Alps, often whitened by snow,

lost in the middle of a distant horizon, highly undefined and luminous ; under a sky so pure and beautiful, and in an air so perfumed—all this combined, forms a spectacle the most magnificent which can be offered to the enraptured senses of human beings. In the middle of the winter the country abounds with the delicious perfumes continually furnished by the delightful petals of thyme, rosemary, lavender, the draba, wild marjoram, orange tree, jonquils, and pinks, and those afforded by the most exquisite fruits ; it is certainly then that every bush is agitated by the motions and humming of clouds of birds escaping from the rigorous cold of the Alps, or repairing there. At the same season the butterfly also and the gilded bee escape the death with which the neighbouring mountains threaten them, and shew themselves happy in seeking their food from flower to flower. From the mildness this beautiful country enjoys in the winter the most parching heat might be expected in the summer ; but the great depth of the sea in the neighbourhood, which cools the ambient air from its surface ; the depth of the springs with which the country is watered, and consequently their coolness at this season ; the continual evaporation from every humid surface, rendered still more abundant by the heat of the season and the situation ; the frequent storms on the summits of the neighbouring Alps, and the sea breeze which is experienced at the same time, all these united, diffuse the most salutary and agreeable coolness. At Turin and Paris, which are situated much further to the north, the advantage of an equal degree of coolness is not to be enjoyed. When the thermometer of Reaumur indicates a temperature of 29° or 30°,* it usually stands at Nice at 20°.† The temperature of Nice is much preferable in this respect to that of every other city on the shore of the Mediterranean, as it also possesses the same advantage of mildness during the winter.

The territory of Nice is on a declivity, facing the sea; neither lakes nor marshes are any where to be found, nor has the sea ever passed its bounds. The Paglion, though rapid in its course, leaves nothing on its bed but pebbles, rolled smooth on all sides. The stalks of vegetables and the trunks of animals are there quickly consumed by the most careful and active cultivation. There is no volcano nor mine in the environs. The elements of the air are precisely in the proper proportion, and there is no source whatever of noxious vapours; but the air is perfectly pure, at the same time that, from a constant evaporation, the

---

* 98 or 100 deg. Fahrenheit.　　† 86 deg. Fahrenheit.

tepid atmosphere receives a suppleness and softness extremely favourable to diseased lungs. The atmosphere also possesses a clearness and transparency which modifies, in a very agreeable manner, the excessive light reflected on the city and surrounding country from the tops of the Alps, which are sometimes covered with snow. In fact, a more delightful sky can no where be found. It is almost always serene, and of a beautiful azure colour.

The spring water at Nice is nearly of the same specific gravity as distilled water. Like all water it contains a quantity of gas, and such portions of neutral salts as not to prevent it from being agreeable. The meat, poultry, game, vegetables, fish, and fruit, are all of the best kind. The latitude of Nice, its position on the shore of a deep sea, the ellipsis of lofty mountains by which it is surrounded, its exposure to the south, its admirable situation, the kind of plants which are cultivated, the salubrity of its waters, the excellence of its eatables, its great light, its coolness in summer, its mildness in winter, the suppleness, calmness, the warmth, the balsamic and restorative qualities of the air, the beauty, softness, and serenity of its sky, the immensity of its superb horizon, and the moderation of the winds which prevail, make it a delightful place, and one peculiarly adapted for the prevention, treatment, and cure of the various kinds of chronic diseases, more especially phthisis pulmonalis, rheumatism, the anomalous forms of gout, syphilitic diseases, debility, cachexiæ, scurvy, nervous and cutaneous affections, hypochondriasis, &c.

The concurrence of all discerning persons in the known world, in the excellence of this climate, or rather its superiority over all others, is evident from the large concourse of sick persons who, from time immemorial, have come to it from the most remote places. The Romans held it in great esteem; and its reputation has encreased daily in proportion as communications between remote countries become more easy. This concurrence of opinion, and the annual cure, by the effect of climate alone, or of that and art combined, of many patients who flock to it from all parts, sufficiently confirms the opinion which we are led to form of all those qualities of which we have stated it to be possessed.

These and the other facts make us justly despise those hasty, or false opinions, which from time to time proceed from the weakness of some men, who vainly think that by passing by, or remaining there a few months only, they can perform a task, which can alone be the result of a long and attentive observation, and of just and well guarded reflection.

The country of Nice, varied by hills, vallies, and plains, so

differently cultivated, so varying in light and aspect, offers a residence to invalids from different quarters, more or less fit for the treatment of the different species and degrees of diseases for which the individuals have had recourse to this land of health. For this reason the choice of an abode ought not to be made by chance ; it ought to be made alone by a professional person, who knows the place accurately, and the pathological state of the patient, and is able to apply this knowledge. A disadvantage which is very often prejudicial to the recovery of strangers arriving at Nice, is the custom of employing those formulæ which they bring with them from a distance, without consulting a physician of the place. Every country, says Baglivi, has its peculiar medicines, and those which produce one effect in Russia, England, &c. will produce a different one at Nice. The Englishman, the Russian, the American, the Frenchman, &c. who comes to Nice, as far as regards medicine, is no longer Russian, Frenchman, &c. ; he is a Nicene. It is therefore necessary to see whether the treatment which has been prescribed, and the doses of medicine which have been given at 500 or 600 leagues from Nice, do not require some modification. Instances are not rare of formulæ, which produce no effect at London, being most advantageous at Nice ; and of others which were of good effect in England, producing an excessive effect here. Besides what is to be expected from the continued use of a formula, exhibited some months before, for a disease, which a thousand accidents during the journey, the change of climate alone, or the ordinary progress of the disease may perhaps have entirely altered ?

It may not be uninteresting to subjoin to the above account, with which we have been favoured, the result of the observations and inquiries of some other individuals who have visited the town of Nice. We are the more induced to make this addition, as the opinions do not seem exactly to coincide with each other. We shall content ourselves with laying them before our readers without any comment, and leave it with them to decide upon what is the actual state of this interesting point.

Mr. Matthews, in his "Diary of an Invalid in pursuit of health," speaks in the following terms :—" The more I see of Italy, the more I doubt whether it be worth while for an invalid to encounter the fatigues of so long a journey for the sake of any advantages to be found in it, in respect of climate, during the winter. To come to Italy with the hope of escaping the winter is a grievous mistake. This might be done by getting into the southern hemisphere, but in Europe it is impossible ; and I believe that Devonshire after all, may be the best place for an

invalid during that season. If the thermometer be not so low in Italy, the temperature is more variable, the winds are more bitter and cutting. In Devonshire too, all the comforts of the country are directed against cold ; here, all the precautions are the other way. The streets are built to exclude as much as possible the rays of the sun, and in the winter are as damp and cold as the rain and frost can make them. And what a difference between the warm carpet, the snug elbow chair, and the blazing coal fire of an English winter evening, and the stone stair cases, marble floors, and starving casements of an Italian house, where every thing is designed to guard against the heat of summer, which occupies as large a proportion of the Italian year, as the winter does of our own. The only advantage of Italy then is, that your penance is shorter than in England."

Of Naples Mr. Matthews says, " Oh ! this land of zephyrs ; yesterday (February) was as warm as July : to day we are shivering with a bleak easterly wind, and an English bleak frost. Naples is one of the worst climates in Europe for complaints of the chest, and the winter is much colder here than at Rome."

Of Montpellier Mr. Matthews says, " It is difficult to conceive how Montpellier obtained a name for the salubrity of its climate. For pectoral complaints it is probably one of the worst in the world. It is true there is almost always a clear blue sky, but the air is damp and biting. You are constantly assailed by one of two winds, which are always blowing, bringing cold or damp."

Of Pisa and Nice, " I believe that Pisa is the very best place on the continent during the winter for complaints of the chest, and Nice perhaps the very worst. Pisa is situated in a low plain, its air is warm, mild, and muggy. The air of Nice is, on the other hand, pure, keen, and piercing. The air of Montpellier is of the latter character, quite different from Pisa. If there be any climate preferable to Pisa, it may perhaps be Rome, where the air is pure without being piercing."

The observations made by Mr. Matthews are so far interesting, as in making them he was not liable to the bias of any medical opinion ; he wrote entirely from the influence of his own feelings. Still, however, they are not conclusive, as no observations can possibly be, which are drawn from the progress of a single season. We need only look to the climate of our own country to perceive the impossibility of forming any general opinion respecting its influence on the human constitution, without observing the events of several seasons in succession.

Dr. Clarke and Dr. Carter entertain the same unfavourable opinion with Mr. Matthews, with regard to the efficacy of the climate of Nice on pulmonic complaints. The former gives it

as his opinion, founded partly on his own observations, partly on the experience of Professor Foderé, that in any stage of phthisis it is useless, and in the latter stages even worse than useless. The latter, though he allows the climate to be one of the best in Europe, says, that it appeared to be of little or no service to persons labouring under confirmed phthisis, and even doubts whether, in some instances, life was not shortened by a residence there.

We should have dwelt more at length on this subject, had it not been fully examined in a former part of our journal, to which we therefore refer our readers for a more complete account of it. Vide Vol I. p. 255, and Vol. II. p. 350.

———————

Art. XII. *Compte rendu à la Faculté de Médecine de Stras-bourg, sur l'Etat actuel de son Muséum Anatomique, suivi du Catalogue des Objets qu'il renferme. Par Jean-Fréderic Lobstein, Professeur d'Anatomie Pathologique et Directeur du Muséum Anatomique.* Strasbourg, 1820. pp. 144.

This collection of anatomical preparations is divided into two principal sections, one of which contains those of the healthy, and the other those of the diseased structure of the human sub-ject, and of animals. In the first, the organs are arranged with a view to their physiology, by systems, and according to their different functions. The human organs, followed by the corres-ponding organs of animals, are contained and classed in twenty compartments, which also include the preparations used for demonstration in the courses of anatomical and physiological lectures. In the second, the organs, in a state of disease, occupy eighteen compartments, and are distributed in an anato-mical order, according to general systems, and according to the organs which belong to the functions of nutrition, relation, and reproduction. To the diseases of the genital organs are united the alterations in the result of conception, viz. monstrosities of the embryo and fœtus, and also original irregularities in the form and structure of those organs.

After this general view of the whole, we shall proceed to a more particular examination of such parts of the work as appear most interesting. The first part, comprehending the objects of physiological anatomy, is, in our opinion, highly deserving of attention, and is worthy of being kept in view as a model for the arrangement of other collections of a similar nature. For these reasons we shall give rather an extended abstract of it in the words of the author.

The osseous system may be studied with a view to comparative anatomy, by the assistance of the entire skeletons of fifty-three different animals, fifty-seven skulls, and a great number of bones, of every species of animals. The collection of preparations, which contributes to demonstrate the structure and formation of bones, is extremely complete. Among many of these, the external and internal periosteum is beautifully injected. The fine injections of fœtal bones have also succeeded equally well. I have obtained a drawing of the parietal bone of an embryo deprived of its periosteum, upon which vessels can be observed ramifying among the long fibres, the disposition of which ramifications, as far as I know, has not hitherto been represented by any coloured figure.

Our myological preparations are, at the same time, connected with the subject of angiology, as they have been made from injected subjects: by this means they have been rendered doubly instructive. In addition to these, we possess others of the fœtus injected for the purpose of shewing their structure. These preparations, when viewed by the assistance of the microscope, display a net-work of blood vessels superior perhaps to those in the collection of Prochaska.

The preparations which relate to the function of digestion are various and extensive.

The alimentary canal of the human subject, from the commencement of the œsophagus to the anus, distended with air and dried, is compared with that of fourteen kinds of animals, prepared in the same way. The organs of digestion of man in particular, commencing with the salivary glands, are contrasted with the corresponding organs of different animals. The minute anatomy of these parts has not been neglected. The intestines are so completely injected, that the pupils can conceive a perfect idea of their villous coat, as it has been distended, and the papillæ erected by the resin of the injection. Portions of the intestines of the fœtus, the vessels of which have been injected with isinglass, coloured white, are not inferior to the preparations of Lieberkühn.

What I have just said of the organs of digestion may be applied equally to those of the urinary system. We have kidneys in which the injection has filled the pelvis and the ureters, after having passed through the canals of Bellini. Thirty hearts of the human subject, as well injected as uninjected, the latter being open and distended, shew the gradual changes occurring in this organ from infancy to old age, and also the disposition of its cavities. In one instance the coronary vessels of the heart have been injected with mercury, like the preparations

made and represented by Nicholls. Another is separated into two portions, or parts, capable of being re-adjusted according to the ingenious idea of Professor Bérot. One of these preparations alone is sufficient to enable the student to form a comprehensive idea of the structure of this organ. In two hearts the nerves of the cardiac plexus are traced into the muscular fibre of the ventricle. And, lastly, the comparative anatomy of this organ may be studied by means of the hearts of twelve different animals.

I shall not speak of the angiological preparations, or, at least, not of those put up with a view to illustrate comparative anatomy. I shall also pass over in silence the anomalies to which vessels are subject, in their origin and mode of distribution; but I cannot restrain myself from mentioning a series of beautiful preparations of the venous system, particularly that which embraces the ramifications of the superior cava, for which we are indebted to the labour and dexterity of the late Gustavus Lauth, Prosector to the Faculty, of whom Science was bereft at the moment when he was realizing the most brilliant hopes.

Twenty preparations of the lymphatic vessels elucidate the receptaculum chyli and the thoracic duct, the right lymphatic trunk, the lacteals of the mesentery well injected, the lymphatics of the liver, the large plexuses of the pelvis and vertebral column; the lymphatic vessels of the lungs, those which pass behind the sternum into the anterior part of the mediastinum, and the superficial and deep-seated lymphatics of the upper and lower extremities.

Though these preparations are sufficient to give pupils an idea of the lymphatic vessels in almost all parts of the body, the absorbent system is still every year injected in the recent subject, during the anatomical lectures. The same is done with the other preparations of minute anatomy, angiological and neurological, and those which relate to the organs of sense.

The organs of respiration, after being examined in the human body, may be afterwards compared with the similar organs of quadrupeds, amphibious animals and fishes. The minute structure of the lungs is rendered apparent, and especially the disposition of the bronchial vesicles, by preparations from the lungs of children.

The larynx displays the superior and inferior laryngeal nerves on both sides, traced to their most minute branches. The thyroid gland is completely injected. I have observed that it is one of those organs in which the injection, when urged into the arteries, returns most readily by the veins.

With respect to the nervous system, we have perfect injec-

tions of the pia-mater, and, in some instances, oven the cortical substance of the brain has been reddened. Our injections of the nerves are not inferior to those represented by Reil, in his work, entitled "Exercitationum Anatomicarum Fasciculus Primus; de Structura Nervorum."

All the cerebral nerves, with their distributions, are illustrated by several preparations. Numerous researches have been made upon the brain itself, the results of which were published in the third and fourth volumes of the "Journal Complémentaire du Dictionaire des Sciences Médicales."

Those who are acquainted with the state of the science, know that in the anatomy of the brain new objects are no longer to be discovered, as, for example, projections or cavities which have hitherto escaped detection; but that it is rather required to consider parts already known under new points of view; to observe their relations, to discover a connexion between those formerly considered as distinct, and to shew that these parts form one entire series, or separate system. To these objects, Professor Lauth, the author of the researches, directed his attention The division of the brain into three principal organs, and particularly his description of the corpus callosum, and the masterly manner in which he considers it, are founded on rigorous observations, and appear to me to throw light, I will not say on the functions of the brain, but certainly on the general anatomy of the most important of all the organs of man.

The sections of the brain, made according to the views and process of M. Lauth, are preserved in acidulated water, which answers the purpose better than any other liquid.

Some anatomists (Wenzel, Carus, Dœllinger, Meckel, and Tiedemann) have studied of late the successive developement of the brain in the fœtus. This subject has occupied our attention, and the researches which we have made on the brain and spinal cord of the embryo at the third, fourth, and fifth month, as well as the coloured plates which we have caused to be executed, form already the materials for a descriptive anatomy of the nervous system of man, considered before his birth. The great sympathetic nerve has been the object of our particular examination. The knowledge derived from dissection, with respect to the distribution and structure of this nerve and its ganglia, its situation in the fœtus, and its organic diseases, are reserved for a work which will soon make its appearance, accompanied by ten coloured plates. The collection is equally rich in preparations of the organs of sense. With respect to that of touch, I may safely say it is impossible to carry the injection of the skin farther than is done in our preparations; and that none can easily be found so instructive as those which relate to

the structure of the negro-skin. The nerves of the tongue are traced to their minutest branches. The pituitary membrane, subjected to maceration after injection, shews, in a very superior manner, the net-work of ramifications on this membrane.

Among the preparations of the eye, we may notice the injection of the vessels of the choroid, of the retina, and of the canal of Fontana, by mercury, &c.

The organ of hearing is illustrated by a very large number of preparations, and its most minute parts elucidated. As early as the year 1752, the old University possessed a collection of sixteen preparations of this organ, so beautifully arranged by hinges, and other mechanical means, that the various parts of the organ may be studied both separately and united, so as to shew their relation to each other. These, the result of the great ingenuity of the Prosector May, were presented to the Royal Academy of Sciences, at Paris ; and the Academy, in the historical part of its memoirs for the year 1734, has mentioned it in honourable terms. These preparations, which we at present possess, have been since augmented by the addition of eighty-seven others, worthy of the originals.

The preparations which relate to the sexual system of the male and female, to pregnancy, parturition, and the products of conception, amount to 182 in number.

In the injections of the testicle with mercury, the fluid introduced into the vas deferens has passed into the seminiferous substance. In two specimens we have succeeded in the almost entire developement of the vas diferens and epididymis.

The injection of the blood-vessels of the testicle with isinglass, coloured by cinnabar, has succeeded so well, that not only the pulp of it has been reddened, but, by the help of a magnifying-glass, a net-work of vessels can be distinguished upon the vessels themselves. The injection of the corpus spongiosum of the urethra clearly demonstrates the venous and plexiform structure of the glands. The separation of the epidermis from off the glands facilitates the examination of the nervous papillæ situated on the whole of its surface.

Among the preparations of the organs of generation in women, I must remark the appearances of the ovary and uterus some days after conception ; the injection of the uterus of pregnant women, and of those who have been delivered : and, lastly, that of the Fallopian tubes, the fimbriated extremities of which are covered by a beautiful network of vessels. The disposition of the membranes in the ovum and in the placentæ, during the early periods of gestation, are illustrated, as well by

the uterus containing the result of conception, as by ova ex-
pelled from the uterus in abortions. In many preparations
the relations of the vesicula umbilicalis, both to the embryo
and to the membranes, is observed. Other specimens shew the
vesicula in its diminished state. There are several placentæ
which belonged to twins, triplets, and quadruplets : their in-
jection has demonstrated sometimes a perfect separation be-
tween them, when they were united into a single mass, and
sometimes an anastomosis between the umbilical vessels at-
tached to them. The minute division of its vessels is remark-
able in some portions of the placenta, as well as in the
cotyledons of the cow and sheep.

A series of fifty fœtus shews their gradual, increase, week
by week, from the second month, up to the full term of preg-
nancy. Six preparations shew the disposition and develope-
ment of the fœtal organs at the different periods of its life. I
have submitted the state of the testicles in the fœtus to new
researches, and think that I have filled up a chasm in the phy-
siological anatomy of these organs by procuring drawings of
the gubernaculum testis in the embryo. But this is not the
place to mention the results furnished by the comparative study
of these objects. It is also useless to repeat the remark several
times made, with respect to the other systems, namely, that
the analagous organs of animals are, in each instance, placed
after those of the human species.

We have, besides, many times dissected animals, with a
view to comprehend the general design of their structure. In
this manner I have been enabled to draw up a description, which
is almost complete, of the organs of the mandril, for future
publication. The dissection of the fœtus of the didelphis
(sarigue) has furnished me with the subject of a Memoir, con-
tained in the 8th volume of the Memoirs of the Societé Médé-
cale d'Emulation. These small animals, which were placed in
the cabinet in the year 1670, by Professor John-Albert Sebitz,
and catalogued under the name of Glires Marsupiales Kleinii,
after the lapse of 148 years, have revealed to the anatomist the
peculiarities of their structure. The examination of the white-
bellied phoca has made me acquainted with some interesting
facts, which have been laid before the public in the Journal de
Médecine, de Chirurgie, et de Pharmacie, for May, 1817.
Notes on the anatomy of the Crescent Phoca (Phogue á Crois-
sant) are ready for publication.

We have made researches on the nervous system of the bat,
and on that of the mole, and have obtained results which appear

to be curious. The dissection we have made of the Swiss Silurus (Silurus glanis) has procured us a complete knowledge of this species of fish, Nothing more is wanting to the anatomy of the Clupea Alosa, the preparations of which, relating to the organs of digestion, circulation, respiration, and the nerves of the gills, have been particularly examined by M. Cuvier. The dissection of the snail and leech have, for the present, terminated our labours in comparative anatomy.

The second section of this work, containing the pathological anatomy, forms a larger part of it than the preceding one, and we regret that our limits will not allow us to give so complete an account of its contents as we should wish. We must, therefore, confine ourselves to noticing a few of its most interesting objects.

Under the article of calcui, are mentioned some of very unusual size from the maxillary duct. The collection of horse Bezoar (intestinal calculi) is also remarkable ; the largest weighs nine pounds and a half. The biliary calculi are arranged according to the classification of Fourcroy : no class established by that chemist is wanting. The urinary calculi comprehend thirty-eight series, a number of which, broken, or sawn, display their laminated structure and the different colours of their strata corresponding to the three principal elements composing them, viz. uric acid, phosphate of lime, and oxalate of lime. Prostatic calculi, which are somewhat rare, are to be seen disposed in regular series, or in a circular arrangement, in the excretory ducts of that gland. Calculi from veins, which the author calls Phlebolithes, have been carefully collected and examined, and a coloured representation, which the author considers unique, made of their laminated structure.

A Dutch author, Van der Haar, has described under the name of Enostosis, a change in the long bones, in which their medullary cavity is obstructed by the deposition of osseous matter ; and their weight is of course augmented very considerably. M. Boyer notices this (Mal. Chirurg. tom. iii. p. 543.) as a rare occurrence, and says that the bone acquires a great density, without any augmentation of bulk. The last point is not observable in the specimens of the Museum, on the contrary, their surface is unequal from the marks made by vessels ; a proof that those of the periosteum had been in a state of distinct dilatation, and that there had been an increased activity in the nutritive system. As the same change has been observed in the bones of the pigeon, M. Lobstein has abandoned the idea of its being of a venereal nature.

The opposite change to that described, is the disposition of

the medullary cavity of a bone to enlarge, at the expense of the compact substance, which becomes by degrees as thin as paper. M. Lobstein states his conviction that it is the arthritic principle which produces this change in the bony tissue, and admits the existence of the disease called by Dr. Saillant medullary gout; not that the medullary matter undergoes a sensible alteration, but because the disease appears to arise in the innermost layers of bone, and to proceed externally.

Under the article caries, a cranium is mentioned, which is perforated with apertures, in the form of a sieve, by a venereal affection. The patient from whom it was taken, was treated with mercury, and even now (as in 1758, when this preparation excited the attention of the curious) globules of mercury are seen in the little sinus, and ulcers in the internal surface of the cranium. This fact, observed by Fallopius and others, had been denied in modern times, till some experiments made at Tübingen in 1808, established its truth.

In a specimen of caries of the pelvis, the ossa pubis et ischii are entirely destroyed, except the portion forming the symphysis, of the former, and that which contributes to the formation of the acetabulum, of the latter.

M. Lobstein observes, that it is not yet agreed what meaning is to be attached to the term spina ventosa. If swelling of the bone in its whole thickness, and a sponginess of its texture, such as results from cells of different dimensions, may constitute spina ventosa; if the cells are filled with fluids of various kinds, if there are osseous excrescences, either on the external surface, or within the above cells, the Museum contains specimens of this disorganization, particularly in the os humeri, tibia, and fibula.

The last form of the disease of bone noticed, is that in which large masses of osseous matter entirely disappear, and no traces of them are found, except insulated fragments, floating in an abundance of mucilaginous matter. The author first noticed this disease in the ribs, and described it with other analagous examples in the Rapports sur les traveaux exécutés à l'amphithéâtre d'Anatomie, p. 46. Since the publication of that, he has observed it a second time on the ribs and pelvis of the same individual. The sacrum and ossa innominata were covered with a thick periosteum, more moist than usual; in detaching it, the compact external table of the bones could be at once removed: a reticular tissue was then seen with larger interstices, which were filled with a substance in colour and consistence very like currant jelly. This disease, in the opinion of M. Lobstein, consists in a sponginess of the bone, accompanied by a secretion of an albu-

mino-mucous matter. In the fluid of the numerous cysts, which supplied the place of the osseous matter destroyed, portions of bone, rendered thin and porous, were seen floating like half dissolved sugar. The contiguous portions of bone had the same spongy appearance.

In speaking of the organic changes of muscles, their conversion into fat, to which the term Myodémie is given, is said to have been observed in two instances. In another the Semimembranosi alone had undergone this change. After some remarks on the sympathetic coincidence in the deficiences and diseases of the muscles of the two sides and extremities of the body, the author relates a case in which the Biceps of each arm, and no other part, was found in a state of gangrene, in a woman who died in child-bed.*

The morbid changes, &c. of the vascular system are contained in the next chapter, from which we shall only mention a rare distribution of the aorta : its arch divides into two branches, which, by their reunion, form a space, and through this pass the trachea and œsophagus. The irregularity is described by Hommel, in the Commerc. Lit. Noricum. 1777. p. 161.

The remaining chapters are devoted to the pathological anatomy of the thoracic organs, those of digestion, of the urinary system, nervous and generative systems. Like the rest of the book, they are made up of a mass of valuable and interesting facts, stated with the utmost simplicity and clearness. Last of all is placed a catalogue of the preparations of this select yet extensive Museum.

The whole number of them amounts at present to 3,286, of which 1,977 relate to physiological, and 1,309 to pathological anatomy. The Museum is open to the public once every week; students have access to it daily; and, with a liberality still more worthy of praise and of imitation, foreigners are admitted at all hours, and at the first application. It is with great astonishment we learn, that only sixteen years have been spent in the accumulation of this admirable collection: for, in 1804, there were only

---

* We had an opportunity during the last summer of examining the arms of an old man, who died apparently from the immediate effect of a similar disorganization, confined to the Tricipites brachii. The muscle of the right side was completely converted into a dark gelatinous matter, in which there was no vestige of any muscular fibres. The muscle of the opposite side was beginning to undergo the same change. From the first appearance of this disease to the patient's death, a space of only thirty-six hours elapsed. The pylorus was found in a scirrhous state

212 preparations.* Three hundred bodies are annually at the disposal of the faculty of Strasbourg. Such noble encouragement and opportunities of observation ; the co-operation of the professors and the practitioners of the town, who transmit, as to a common centre, the result of their particular pathological examinations; the rare and curious objects which flock from the neighbouring country ; the intelligence and zeal of the prosectors and students ;—all these circumstances combined, lead us to expect from this quarter still greater contributions to medical science.

---

* The very complete Museum of Berlin cost its founder, Professor Walter, fifty-four years in its collection, but it contains not more than 2,268 preparations.

ANALECTA.

1. *Case of Successful Operation for Inguinal Aneurism.*

This operation was performed by Dr. Smith, and is related in the Philadelphia Journal of Medical and Physical Sciences for February, 1821. Achilles H. Elliot, of Killingworth, Connecticut, some time in the month of June last, felt a pain in the left groin, and soon perceived a small pulsating tumour : it was situated just under Poupart's ligament, and increased rather rapidly. It pulsated strongly, and from its size might contain eight ounces of blood. The whole limb was considerably œdematous. Dr. Dorsey's mode of operating was adopted, in which there is not much difference from that of Mr. Abernethy. An incision was commenced about an inch above Poupart's ligament, and directly over the external iliac artery ; it was extended obliquely upwards, nearly in the direction of the external oblique muscle, about three inches and a half. The skin and adipose membrane being cut through, the fibres of the external oblique were divided longitudinally, and the internal oblique and transverse cut across, which brought the peritonæum into view. The finger was then insinuated between this membrane and the muscles, down to the external iliac artery, which was readily found, and detached from the surrounding parts. By means of Dr. Physic's curved forceps, the operator then passed the aneurismal needle under the artery ; but owing to an imperfection in the needle, which was made for the occasion, it sliped out of his fingers, after he had hold of the point of it. He was obliged to withdraw it, and again to fix it in the forceps, and when be brought out the point a second time Dr. Knight, who assisted him, drew it through, which carried the ligature under the artery. After examining, to be certain that the ligature included nothing but the artery, he drew it very tight; at this moment the patient complained of severe pain, but it lasted only a few minutes. The pulsation in the aneurismal tumour ceased immediately on tightening the ligature. The wound was then dressed in such a manner as to afford moderate pressure both on it and on the aneurismal tumour. Before this was done the limb of the affected side was sensibly colder than the other ; four hours afterwards the contrary took place. The next day a pulsation was felt in the posterior tibial artery, where it passes under the malleolus internus, and the aneurismal tumour was considerably diminished. It continued to diminish, until it wholly disappeared, which happened in about four weeks. The ligature came away on the twentieth day, and no unfavourable symptom occurred during the cure. To remedy the embarrassment which occurred from the imperfection of the needle, it should, for future operations of the kind, be made with a broad point, and so curved, as to describe nearly half a circle in its shape.

2. *Case of the Removal of a large Stone from the Bladder, by an Incision through the Rectum.*

We have already had occasion, in the present number, to notice instances of the above operation both in males and females ; the following is another example of the same kind, which is related in the Annali di Medicina, for April, 1820, by Dr. Barbantini, Principal Surgeon of the Hospital at Lucca, &c.

A man, fifty years old, had for a long time (in the bladder) a stone, which, by its weight and size, had depressed the lower part of that organ ; it protruded into the

rectum, and extended from one ischium to the other. Such a disposition induced the author to prefer the operation through the rectum to the lateral method. For that purpose he procured a long grooved sound, and forceps with the blades unconnected, and broader than usual at their extremity. Every thing being prepared for the operation, and the patient being placed in a horizontal position, the operator passed into the bladder a staff, which he intrusted to an assistant; then, with his left hand, he raised the scrotum, and stretched the integuments of the perinæum with the thumb and fore finger of the same hand. He divided the sphincter with the same kind of knife as Cheselden employed, the point of which was inserted at about half an inch from the anus, and he finished the incision, particularly at the upper part, where the sides of the intestine yielded a little, by depressing the edge of the instrument on a wooden gorget, which he had introduced into the rectum to protect that portion of the viscus which corresponds to the coccyx; then carrying the fore finger of the left hand into the wound, he used it to guide the instrument into the groove of the staff, and made in the bladder, beyond the prostate, an incision of moderate extent, because the point of the instrument was arrested by the stone, which was very large, and extended very low. The operator next introduced his fore finger to the stone, and conducted along it the long grooved sound, which he passed to the proper depth; then withdrawing the staff, he introduced the knife into the groove of the sound, and extended the incision in the bladder as far as he thought necessary for the extraction of the stone, to admit of the passage of the foreign body, which he embraced by its shortest diameter with the forceps of Frère Côsme, but which he could not extract, although he emplc-. ~~ch force for that purpose. The calculus being hitched in the wound of the bladder, the operator made use of the other forceps, the branches of which he introduced separately, and with them he laid hold of the stone as high as possible. The extraction required much greater efforts than those generally necessary. Injections of tepid water were made into the bladder, and some dossils of lint were placed between the lips of the wound to prevent its too rapid union. The calculus weighed nine ounces and a half. No severe symptom manifested itself in the course of the treatment: the greatest care was always used to prevent the too ready cicatrization of the sphincter ani, in order to leave an easy egress to the fæces, and to prevent their passage into the bladder. The urine flowed through the anus during the first eighteen days, except some drops, which passed by the urethra. When the finger was introduced into the wound at this period, the sides of the bladder were felt tumid and hard, and some days afterwards small calculous concretions, strongly adhering to the internal coat of the rectum, were discovered. The operator succeeded, with the end of his finger, in detaching a portion of the false membrane on which these little calculi were scattered, and this operation, repeated after three or four days, was sufficient to remove all that was in the rectum. A gum elastic catheter, placed in the urethra at this time, gave exit to the urine, which no longer passed by the wound, except when mucus obstructed the catheter, and forced the urine again to take its course by the anus. Injections through the catheter and the wound were then made with success. Eighty days after the operation the patient passed his urine voluntarily, and no longer perceived that the little wound, which was still unhealed, gave passage to the urine, although the use of the catheter was abandoned.

3. *Tracheotomy. By Dr. Klein, of Stuttgardt.*

The son of a groom, at Stuttgardt, four years old, whilst playing (on the 23d of March, 1814, at ten o'clock, a. m.) with some beans, was seized with a cough which threatened suffocation, and told his mother that he had swallowed one of them. When the paroxysm had ceased a little, his mother gave him a portion of bread to eat, with a view of pressing down the bean, which she supposed to have stuck in his throat. After a short interval, a fit of coughing of the same kind

recurred, and in the same manner 'ceased, and the patient was so well again as to eat some biscuit which was given him, with avidity. During the latter paroxysm the rolling of the bean up and down had been heard. At two o'clock, p. m. Dr. Klein saw the patient; but although he played and jumped about for more than half an hour, the coughing did not return, the breathing was natural, and nothing could be felt externally, though pressure was made on the trachea to excite irritation in it. A strong emetic was given, which caused repeated vomiting. About five o'clock the difficulty of breathing returned : Dr. Klein heard and felt the bean roll up and down, and performed the operation without delay. After dividing the integuments by an incision about three inches long, and pushing upwards the thyroid body, he cut directly down in the median line, (for the trachea could not be felt at all,) and in a subsequent and deeper incision the air issued out forcibly. The wound was enlarged upwards and downwards, until three or four rings of the trachea were divided ; the external wound was kept open by means of blunt hooks, and that of the trachea distended by a pair of polypus forceps, in hopes that the foreign body would be expelled by the force of expiration. At this instant the child became suddenly livid and convulsed, the heart ceased to act, and to all appearance life was extinct, although the loss of blood externally was but small. Irritation of the internal membrane of the trachea was useless. A pair of narrow curved forceps were introduced into the aperture, the bean was felt, seized, and extracted; it was considerably swollen: in a moment the patient, apparently dead, again respired. The wound was covered with oiled charpie, and closed by plaister; and after using gargles of cold water, &c. the patient breathed well. Mucilaginous drinks, opium, &c. were administered. In the evening febrile symptoms appeared, and some air forced its way through the dressings, which rendered their tighter application necessary. The patient passed a quiet night, was little annoyed by cough, and the expectoration was unmixed with blood. He spoke distinctly. On the fourth day the dressings again required renewal from the same cause. The wound now healed, and in the third week the child was quite well. In 1818 he had a tolerably severe attack of croup, from which, however, he recovered perfectly.—(*Graefe u. Walther's Journal.*)

A case very similar to this, which occurred to M. Boyer, is published in the Nouv. Jour. de Med. February, 1820; transcribed in our second volume, p. 333.

4. *Case in which the Fluid of Ascites was repeatedly discharged through the Fallopian Tubes, Uterus, and Vagina.*

Communicated by Mr. L. Wheeler.

In the seventh volume of his Elementa Physiologiæ, p. 105, Haller has given us the following passage, which forms part of his Anatomical Description of the Fallopian Tubes. " Eadem aperto osculo in cavum abdomen aperiuntur, eòque possunt setam, acum, sanguinem ex utero emittere, ut etiam cogitatum sit, de Hydrope per eam viam educendo." I have lately had an opportunity of witnessing the verification of this idea, which took place spontaneously, and as it seems to be a case of extremely rare occurrence, I shall relate it without any further comment:—

Mrs. Diaper was delivered of a child in May, 1818, and from that time she remained unwell. Her abdomen became distended with fluid, her legs also became anasarcous; her urine was high coloured, and variable in quantity. In September, 1820, when her abdomen was very much distended with fluid, she had suddenly a profuse discharge of it through the vagina; no doubt by the way of the fallopian tubes and uterus. It gushed forth very rapidly and forcibly, like, as she expressed it, the discharge of the water before labour. She had been amenorrhœal for some months previously, but the fluid did not in the least partake of the appearance of the menses, as it was considerable in quantity, and quite transparent.

After its evacuation the abdomen was restored to its natural dimensions. Fresh accumulations took place, and the fluid was repeatedly discharged in a similar manner: in each instance it amounted to about three pints in quantity, and it was repeated five times at the interval of about a month from each other. The ascites has, however, undergone a spontaneous cure, and the accumulation has entirely ceased since Christmas, 1820, but the anasarca of the legs still occurs, from time to time, towards evening. The menses have also returned, which may be connected with the amelioration of her health in other respects.

5. *On the Effects of Iodine, and the Precautions necessary to be adopted in its Exhibition as a Remedy for Bronchocele.*

We think that an extract from a Memoir which M. Coindet has published on this subject, in the number of the Bibliothèque Universelle, for February, may be read with interest. Of all the preparations of iodine that of the hydriodate of potash with a superabundance of iodine is the most manageable, and the one which produces the fewest accidents. For its preparation, 36 grains of the hydriodate of potash and 10 grains of iodine are dissolved in an ounce of distilled water. From 6 to 10 drops are at first prescribed three times a day, and the dose is increased or diminished according to the effects produced. M. Coindet is of opinion, that it is necessary to observe the time when the iodine is about to manifest its action, so as immediately to suspend its exhibition, and resume it eight or ten days afterwards, that is, at the moment when the action of that before administered must terminate; again to suspend it and resume it, in observing nearly the same rules as every prudent practitioner follows in the administration of mercury, rules which have not always been kept in view by those who have made use of iodine and the neglect of which diminishes the success of the remedy.

The following are the alarming symptoms observed by the author:—Acceleration of pulse, palpitation, dry cough, watchfulness, marasmus, and prostration of strength; sometimes swelling of the legs, tremors, painful hardness of the bronchocele, diminution of the breasts, or a remarkable augmentation of appetite supervene; and, he adds, that in almost all the instances which he has observed, to the number of five or six, a very rapid diminution, or a disappearance, more or less complete, has taken place during those symptoms, even in hard, bulky, and old bronchoceles. On some patients the medicine acts almost immediately, while on others no apparent effect is produced, even after they have taken it for several weeks in succession. An example of its quick action is related, which occurred in a man who had had an enormous bronchocele in the two lobes of the thyroid body for a long series of years. Its increase was progressive, and it was very hard to the touch; the patient complained of choking and oppression when he walked, stooped, or went up stairs, but in other respects he enjoyed good health. He took thirty drops of the medicine daily, but on the 5th day complained of an increase in the size of the bronchocele, aphony, and rather severe pains, which required the suspension of the iodine, and the repeated application of leeches and poultices to the part. In fifteen days he had recovered his former state, with the exception of hoarseness: the bronchocele was also considerably diminished and softened. Two months after the commencement of the treatment, the remedy having been again administered during four days, and again discontinued, the bronchocele was sufficiently diminished to free the patient from all inconvenience.

M. Coindet considers that the iodine is contra-indicated when the constitutions of patients are remarkably delicate, nervous, or weak. But he has seen its exhibition attended with admirable success when the precautions he recommends have been observed, and the patients were affected with no other complaint than bronchocele, but above all when they were at an advanced period of life. The following is an example of its beneficial operation; it occurred in a woman, seventy-five years

old, who was affected with pains in the head, a tendency to drowsiness, and so great a weakness and numbness of the right arm, that she thought she touched every thing through a glove. These symptoms increased as an immense bronchocele was developed in the right side of the thyroid body, as it were in an acute manner, for although it had commenced thirty years before, it had during three months been increased in bulk nearly as much as the size of the fist. It evidently interfered with the circulation in the brain, and compressed the brachial plexus. By the employment of the iodine the disease was arrested after a fortnight; in thirty days the bronchocele and bad symptoms were diminished. In a month afterwards the swellings, paralysis, and affection of the head were all entirely dissipated.

The credit of the remedy is supported by other authorities besides that of M. Coindet; and the name of Breschet is mentioned as having communicated the results of his practice on this point to the Societé Médicale d'Emulation, coinciding with the above stated facts.

6. *Case of Gun-shot Wound, with Fracture of the Clavicle, and Laceration of the Subclavian Artery, cured by Compression. By Dr. Bedeschi.*

A MAN, aged twenty-seven, received a gun-shot wound in the centre of the right scapula; the ball fractured the middle part of the clavicle, and, judging from the direction of the wound and the enormous loss of blood which followed, must have lacerated the subclavian artery, vein, and nerves. The arm was cold, and had scarcely any motion or feeling. The hemorrhage was, in the first instance, checked by making pressure with the finger on the artery where it passes between the scaleni; and afterwards pledgets of charpie and graduated compresses were applied to this part and to the broken clavicle, the whole being supported by a bandage. Dry frictions were performed on the arm, and warm fomentations employed. Although the three first days passed without accident, some individuals advised the amputation of the arm in the shoulder joint, or the ligature of the subclavian artery, to prevent the formidable hemorrhage which might be expected on the separation of the eschars. Dr. Bedeschi rejected both these measures, considering the first as only to be resorted to in case of the occurrence of gangrene, and resting his practice, first, on the suspension of hemorrhage, owing to the eschar and the formation of a clot of coagulable lymph; second, on the sufficient nature of the compression made upon the artery at its passage from between the scaleni, and on the sternal part of the clavicle, rendered motionless by the fracture, and which itself performed the office of a compress on the artery; thirdly, because he thus retarded the performance of an operation, difficult and uncertain in its results, since it would have been necessary to place the ligature on the subclavian at its exit from between the scaleni, and that there was a risk of comprising in the incision the transversalis humeri, and of interrupting the circulation in the cervicalis profunda, which according to the author, would deprive the limb of its sources of vitality. Lastly, the knowledge that hemorrhage rarely appeared after gun-shot wounds, and the numerous examples of obliteration obtained by compression, made him decide in favour of this method. We pass over the details of the progress of the case, from its commencement to its termination. No bleeding took place, but the arm wasted away, and remained motionless. The pulsations of the subclavian artery, pretty strong at about half an inch beyond the scaleni, became weaker and scarcely sensible at the place of the wound, and as far as the axilla; they were again perceived in the middle of the arm, and at the wrist were tolerably strong, though rather contracted. By means of exercise and surgical measures, the activity of nutrition in the arm was increased, and its strength so far restored, that at the end of twenty-eight months the patient had recovered the use of this part.—(*Annali Universali di Medicina del Dottore Omodei. Febrajo,* 1820.

7. *Abstract of a Letter from Dr. Zecchinelli, of Padua, to Dr. Thiene, of Vicenza, on a Variety of Syphilis, which he calls " Falcadina," from its having long raged in the Village of that Name.*

CHARGED, by the Venetian Government, with the sanitary police of the provinces of Belluna and Padua, the author found, in the little village of Falcada, (the population of which does not exceed eight hundred,) several families affected with peculiar venereal symptoms which he had not met with elsewhere. This disease had been long known in the country, and had received the name of " falcadina." If the general opinion in the province were correct, we might believe not only in the spontaneous origin of certain contagions, but also in the existence of an indigenous venereal affection of a peculiar character. The author cites, on this occasion, the example of two young people, who enjoyed the best health until the moment of their union, and who, from that time, fell into a state of bad health, which slowly degenerated into a disease with all the characters of confirmed syphilis. Dr. Rizzi, a Septuagenarian, thinks that the falcadina was imported into the province by a woman, who, after having long wandered about the country to procure the means of subsistence, returned to Falcada, covered with a venereal itch, ulcers, and excrescences in the vulva, and pains in the bones. According to others, it was a man of the name of Mæser, who, having had connection with a woman in the Tyrol, received the infection from her, and communicated it to his wife. The infected persons have, in the first place, been covered by a psoric eruption; but no conclusion can be drawn from this, as this eruption is common to almost all the inhabitants of this part of the mountain. It results from the inquiries of the author, that the venereal affection shewed itself equally with those who might have had connection with women, and those whose age would not permit the possibility of this mode of communication, with this difference only, that the disease did not affect the organs of generation, but shewed itself by corroding ulcers in the throat, extending ultimately to the nasal fossæ, which they entirely destroyed. Ulcers, more obstinate than those of the throat and nose, affected the skin of the face, of the neck, and chest, which they destroyed, and having healed on one side, passed to the opposite one, where they exercised the same ravages. These ulcerations were rarely accompanied by pains in the bones and exostoses. The greater number of the adults were affected with blennorhagia, ulcers on the penis, buboes and excrescences of various kinds. All, or nearly so, had the itch. Many fell victims in the last stage of marasmus, and some in the most frightful convulsions. This disease has always been confined to the village of Falcada ; the terror that it inspired having forced the surrounding people to take all possible precautions to preserve themselves from it. It has almost wholly lost its first activity, and the families first affected are at present free from this scourge.

The examination of individuals infected or cured, has led the author to ascribe three modes of communication to this disease : by coitus, by contact with the skin in a state of ulceration, and by inheritance. The first and last of these he thinks cannot be doubted ; and cites, in support of the second, the case of a girl, aged twelve or thirteen, who, having slept in a bed which had been used by a man affected with this disease and the itch, soon contracted the latter, which was complicated with venereal ulcers in the face and throat. This girl communicated the infection to the whole family, and the youngest brother died of it in two years, the skin of the face and eyes being entirely destroyed by the ulcers which occurred. The rest of the family was saved by a mercurial treatment.—(*Annali di Medicina, Aprile,* 1820.)

8. *Superfetation.*

M. Ch. de Bouillon has observed a curious case of superfetation, which presented itself in a Negress. At the end of her pregnancy she was delivered of two male

children, full grown, and of the same proportions, but the one a Negro, and the other a Mulatto. Here the superfetation could not be doubted, as the colour of the children attested the share which two individuals of different races had in fecundation. The mother, after a long resistance, confessed that she had connection the same evening with a White and a Negro.—(*Bulletin de la Faculté, et de la Société de Medicine, &c. No. III.* 1821.)

A case of a similar kind, in a white woman, is mentioned by Dr. Elliotson, in his Translation of Blumenbach's Physiology. p. 331 of 2d ed.

M. the Prefect of Police, in a letter, dated February 9th, 1821, writes to M. the Dean of the Faculté, that he relies on his authority to crush the germs of insubordination which exist among the students, and to tranquillize their dispositions, which are far too much disposed to be excited (disposés à l'exaltation).—*Seance du 22 Fevrier, Buletins de la Faculte, No. II.*)

QUARTERLY LIST OF NEW PUBLICATIONS.

ANATOMY AND PHYSIOLOGY.

L'Allemand. Recherches Anatomico-Pathologiques sur l'Encéphale et ses Dependances. Paris.

Duval. De l'Arrangement des Secondes Dents, &c. 8vo. Paris.

Lobstein. Discours sur la Prééminence du Systéme Nerveux dans l'Economie Animale, &c. 8vo. Strasb. et Paris.

Opoix. L'âme dans la Veille et dan le Sommeil. 12mo. Paris.

BOTANY.

Jaune St. Hilaire. Plantes de la France, ou naturalisées et cultivées en France; decrites e peintes d'après Nature. 2e Part. 28e Livraison. 8vo.

Lœuillart d'Avrigny. Principes de Botanique Medicale. 12mo. Paris.

Mérat. Nouvelle Flore des Environs de Paris. 2e Ed. 2 tom. 8vo. Paris.

CHEMISTRY, MATERIA MEDICA AND PHARMACY.

Carbonell. Don F. (Prof. de Chimie à Barcelonne, &c.) Elemens de Pharmacie, Traduits de l'Espagnol sur la troisieme Edition et augmentés de Notes. Par J. H. Cloquet. Paris.

Guibourt. Histoire abrégée des Drogues simples. 2 Tom. 8vo. Paris.

Formulaire Pharmaceutique a l'Usage des Hopitaux Militaires de la France, &c. 8vo. Paris.

Achille Richard. Formulaire de Poche, &c. 32mo. Paris.

MEDICINE AND SURGERY.

Maunoir. Nouv. Methode de traiter le Sarcocele, &c. 8vo. Geneva.

Pommer. Beiträge zur näheren Kenntniss des Sporad. Typhus. 8vo. Tübingen.

Weber. Sammlung Medicin. Dissertationen von Tübingen. Tübingen. 8vo.

Schäffer. Versuch eines Vereins der Theorie and Praxis in der Heilkunst. 2r. Prakt. Thl. 8vo. Tübingen.

Bergamaschi. Sulla Miellitide stenica e sul Tetano, loro identita, Metoda di Cura, e Malattie secondari che ne derivano, &c. Pavia. 8vo.

Zang.   Trattato di Operazioni Chirurgiche. Trad. dal Tedesco di Manfredini. 8vo.   Parte 1.   Modena.

Lettera del Sig. Grüberg de Hamso al Sig. Dott. L. Grossi sulla Pesta di Tangieri. negli an. 1818-9.   8vo.   Genova.

Henke.   Zeitschrift für die Staatsarzneykunde. Erster Jahrgang, erstes Heft. Erlangen.   1821.

Goelis, L. A.   Praktische abhandlungen über die vorzüglicheren Krankheiten des kindl. alters.   1. Bd.   2te Aufl.   8vo.   Wien.

Bernt.   Beiträge zur gerichtlichen Arzneykunde.   III. Bd.   Wien.

Ehrhard, J. H. G.   De Aneurysmate Aortæ Commentatio Pathologica.   4to. Lips.

De Montègre.   Traité Analytiqne des Affections Hæmorrhoidales.   8vo.   Paris. Nouv. Ed.

Georget.   Considerations sur la Folie, &c.   8vo.   Paris.

Chopart.   Traité des Maladies, &c. des Voies Urinaries.   Nouv. Ed. augm. de Notes, &c.   2 Tom. 8vo.   Paris.

Ducasse.   Memoires et Observations de Médicine et de Chirurgie.   8vo.   Toulouse.

Roche.   Refutation des Objections faites à la nouv. Doctrine des Fiéères, &c. 8vo.   Paris.

Saucerotte.   De la Conservation des Enfans pendant la Grossesse, &c.   2d Ed. Paris.

Rostan.   Recherches sur une Maladie encore peu connue, &c.   8vo.   Paris.

Tommasini.   Considerations med-prat. sur l'Inflammation, et la Fièvre continue. Trad. de l'Italien par Ratier.   8vo.   Paris.

Mercy.   Nouv. Traduction des Aphorismes d'Hippocrate, &c.   2 Tom. 12mo. Paris.

Fagés.   Recherches pour servir a l'Histoire, &c. de la Fièvre.

Authenac Manuel Medic. Chirurgical.   2d Ed. 2 Tom. 8vo.   Paris.

Moreau de Jonnes.   Monographie Hist. et Medic. de la Fièvre Jaune des Antilles, &c.   8vo.   Paris.

Parent Duchateler et Martinet.   Recherches sur l'Inflammation de l'Arachnoïde Cérébrale et Spinale.   8vo.   Paris.

MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

Dugés.   Essai sur les Maladies des Enfans.   4to.   Paris.

Legouais.   Sur l'Emploi des Saignées, &c. dans le Traitement de la Péritonite Puerpèrale.   4to.   Paris.

Clarke.   Beobachtungen über die Frauenzimmerkrankheiten. aus dem Eng. übers. vom Dr. Heineken.   8vo.   Hannover.

NATURAL HISTORY.

Dictionnaire des Sciences Naturelles, &c.   Par plusieurs Professeurs du Jardin du Roi, et des Principales Ecoles de Paris.   Tom. 18.   (G A—G J U.)   8vo. Strasb. et Paris.

Planches du Dict. des Sciences Nat. fasc.   16.   8vo.   20 pl.

OPHTHALMOLOGY.

Demours.   Précis Théorique et Pratique sur les Maladies des Yeux.   8vo.   Paris.

VETERINARY MEDICINE.

Blaine.   Handbuch der Thierheilkunde u. s. w. aus. dem Eng. übers. von L. Cerutti.   Leipz.

Girard.   Traité d'Anatomie Vétérinaire, &c.   2d Ed. 2 Tom. 8vo.   Paris.

CONTENTS.—N° XII.

THE

QUARTERLY JOURNAL

OF

FOREIGN MEDICINE AND SURGERY.

ART. I. *Notice sur le Premier Ouvrage d'Anatomie et de Médecine, imprimé en Turc, a Constantinople, en 1820, intitulé " Miroir des Corps dans l'Anatomie de l'Homme" Evoyé et Offert par S. Exc. l'Ambassadeur de France près la Sublime Porte a la Bibliothèque du Roi ; suivie du Catalogue des livres Turcs, &c. Par T.-X. Bianchi, Adj.-Secrétaire-Interpréte du Roi pour les Langues Orientales.* Paris, 1821.

THOSE who are interested in the progress of science, and more particularly in that of medicine, cannot but feel pleasure in learning that in Turkey—a part of the world where knowledge has hitherto made the most inconsiderable advancement, where every thing is under the dominion of prejudice, and the most beneficial suggestions are opposed with the most obstinate animosity,—the Government has lately caused to be composed and printed in the vernacular language, the first work on anatomy and medicine, which has been produced by the press at Constantinople.* Whether we consider the aversion entertained by the Turks for the most useful knowledge, which does not accord with the spirit of the Coran, or is derived from Christians ; or their implicit obedience to the Oulèmas,† whose interest and

---

* The introduction of printing took place at Constantinople only in the year of the Hegira 1139 (1726-27). It suffered interruptions from 1743 to 1784, and since its commencement to the present time, which comprehends the space of nearly a century, not more than sixty works have been printed.

† The ministers of religion and justice.

policy have uniformly prompted them as much as possible to enslave and paralyze the national mind, this revolution in the opinions of Mussulmen appears in an equal degree extraordinary.

The only step which the Turks have taken in civilization for the last century has been the adoption of printing, but this improvement was fast losing its beneficial effects till the reign of Selim III. who somewhat revived the declining state of dawning literature. While he directed the helm of government, although for a short period, the Turks, excited by the apprehension of their enemies, and assisted by foreign officers, erected their fortifications and organised their artillery and marine. But notwithstanding these improvements, the prejudices and religious scruples against every kind of representation of human figures ; * the religion which forbids the contact of blood, as a pollution ; the law against the opening of bodies ; † lastly, the belief in predestination, which ranks improvidence and indifference to the accidents of life among religious virtues—by their combined operation, afforded till the present time, insurmountable barriers to the progress of anatomy and surgery. From all these obstacles then, the work of which we are about to give an account, cannot fail to excite general attention, and to constitute an epoch in the history of the Ottoman Empire.

It consists of a volume containing about 300 folio pages, and, what is more particularly worthy of notice, it is accompanied by fifty-six indifferently engraved plates, in which the human figure, and the various objects of anatomy are depicted. The greater part of it has been copied by the author, Châni-Zadeh Mehemmed-Ata-Oullah, from foreign productions of a similar nature. According to some communications made to M. Bianchi by a person lately arrived from Constantinople, this Mussulman must be the son of an old and principal physician of the Government, whom his father sent to Italy for the purpose of prosecuting his studies, and who at his return immediately engaged himself in writing on anatomy and surgery.

The principal physician of Government, called in the Turkish language *Hékim bachi*, arrives at his dignity after having filled the office of cadi, or judge, and is chosen from the religious or judicial officers. It is only when he has arrived at the end of

---

* The 22d verse of the second chapter of the Coran expressly forbids the fabrication of any image representing the Deity, a commandment which seems to be considered by the Turks as equally prohibiting the representation of human figures.

† The opening of a dead body is absolutely forbidden, even though the deceased may have swallowed a valuable pearl, the property of another individual.

his career, and at the rank to which all his colleagues may aspire, that he is nominated as the chief physician of the Empire, without having undergone any medical education, which could entitle him to the office. He has, therefore, at the same time to fulfil the duties of his other employment, and to direct his attention to the study of medicine and surgery, a circumstance which will enable us to judge of his necessarily limited acquaintance with the knowledge required for the exercise of his new profession; though he is ex-officio at the head of the medical department in the empire ; as the physicians, surgeons, and druggists, subject to the Grand Senior, are nominated by the principal physician of government, a source from which he derives a considerable revenue.

M. Bianchi observes that, notwithstanding the prejudices, or rather the superstitious respect of the nation for antient customs, many individuals are to be found among the public officers, who have a sufficient degree of intelligence to induce them to countenance improvements, calculated for the general good of the nation. He was more particularly led to make this remark, at the time of the plague in the year 1811-12, when he was commissioned by the French Consul, to translate into Turkish the instructions, contained in the work of Guyton-Morveau, on the means of destroying the infectious properties of air by the aid of chlorine. The translation was put into the hands of the Governor of Smyrna, and was received with equal pleasure and gratitude. The method was not only at once adopted by him, both as an antidote against infection, and a means of purifying contaminated apartments and goods, but he also ordered its adoption by all the members of his family, at that time engaged in the principal administrations of Smyrna, as well as by the Greek and Armenian communities of the same city. However satisfactory and beneficial the plan may be, it is at present highly probable, that the tragical death of the Governor, which took place in 1817, by order of the Grand Signior, and the disgrace of all his family, will plunge into oblivion not only the plan itself, but also the salutary effects by which it was followed—a result which is inevitable in a nation, among whom instruction and information are not general, and men, disposed to protect the interests of science, have only an ephemeral existence.

It is very much to be wished, that this first appearance of a taste for medicine and surgery, by becoming more general in the East, may produce physicians in that part of the world, who would be better calculated than the present race, to assume the guardianship of the public health ; for, with the exception of some foreigners at Constantinople, and the other towns of the Levant,

who acquit themselves with reputation in their profession, the whole Empire is infested with a mob of Charlatans and adventurers, who are constantly committing devastations on mankind by the exercise of a profession, of the first elements even of which they know nothing.*

The work of Cháni-Zadeh, in the opinion of M. Bianchi, is written in a style which is clear, concise, and elevated : most of the technical expressions have been borrowed from the Arabic, though sometimes, and especially in the anatomical description, the author has retained the Greek or Latin word employed in the original source from whence he derived his information.

The following extracts, which M. Bianchi has translated from the text of the author's first preface, contain some interesting details on the arrangement of the book, the nature of its contents, and the motives which induced the Sultan Mahmoud to permit its publication by an express edict, which was also necessary to give authority to the introduction of printing in the reign of Ahmet III. in the year 1726-27. The author of this notice believes that the work of which he has given the outline may be of utility to those who have an idea of practising medicine or surgery in any part of the Levant. It is well calculated for teaching the Turkish language, and will enable the student to express himself without the assistance of an interpreter—an object, which the insufficiency and poverty of the existing dictionaries on these subjects have hitherto rendered impossible. The singularity of the Oriental expression, and the rodomontade style of the following extract, will perhaps render its perusal not uninteresting, more particularly as the production is of very recent date ; we are, therefore, induced to give it in its entire state, as a curiosity in medical literature :—

Translation of the first Preface of Cháni-Zadeh.

" Medicine and anatomy are elementary sciences, and the objects of general study. They fall within the cognizance of philosophers, literati, and the ministers of religion. Not only learned men and people of sound judgment acknowledge that the aim of these sciences is the discovery of truth, but from the remotest antiquity they have always been considered by the highest authorities, as constituting a branch of valuable and honourable knowledge. The advantages, which result from their

* We beg leave to refer our readers to the second volume of M. Tancoigne's Voyage à Smyrne, in which he speaks of the Oriental physicians with equal truth and spirit.

cultivation, are not confined to the human race, but from the united testimony of the learned, their benificent influence embraces all animated nature. The benefits of modern medicine are most obvious, and anatomy, founded on accuracy and attention, to speak truly of medical men, has arrived at such a degree of perfection, that every thing which now concerns the treatment of internal maladies, the dressing of wounds and ulcers, the cure of infirmities, by an admirable disposition derived from the rules of art, is divested of doubt and exempt from danger, for those who are called to the practice of these sciences.

" In conformity to these considerations Khamsèi Châni-Zadeh has deposed at the foot of the supreme throne the three following books, bound into one volume.

" The excellent judge, he, who is the regulator of the laws of the State, the Plato of the Empire, and of the Califat, the sovereign to whom fate has revealed science and wisdom, the sultan of sultans, endowed with the wisdom of Solomon, the monarch whose glory recals the time of Cosroès, the king of kings, invested with the power of the age of Djemchid, the sultan, the son of a sultan, the intrepid sultan Mahmoud ; Khan, the son of the glorious sultan Abdul-Hamid-Khan (may the sun of his power never cease to illuminate the course of his victories and glorious enterprizes !) ; his majesty our lord, having at length condescended, during many days, to examine and to make profound observations with justice and discernment on all the truths of the above mentioned book, acknowledged that, independently of the great benefit, which would be derived from it to the Ottoman Empire (the duration of which is eternal), and also to Mussulmen, it had never yet been preceded by any work, the advantage of which could be at all compared with it, and that as such it was worthy of being considered among the precious and innumerable productions, which have rendered his fortunate reign illustrious. His majesty, from all these considerations of general good, attached the greatest importance to the circumstance of the printing and publication of the work under his supreme auspices. This determination came opportunely to justify the precept : *That Kings are inspired.*

" The figures necessary for the work having been arranged and corrected by the author, who procured an edict marked with the signs of wisdom and happiness, from the execution of which the work was to be printed at the imperial press. From this instant the old and well attached servant of the Sultan, he who was brought up in purity and sincerity, and under the shadow of the phœnix, protector of his Highness, one of the guards of the archives, and prefect of the imperial press, Esseïd Abdul

Rahîm, after having recited the Bismllah, immediately com-
menced the work.* But what was purely the result of the mi-
raculous power of his Majesty is, that without the necessity
of having recourse to foreign means, by the assistance of the
Deity, and by uniting the numerous artizans to be found in
Constantinople, the necessary figures were engraved on fifty-six
plates of copper. On the other hand the daily corrections of
the author caused the printing of the work to be soon termi-
nated. At length, thanks to the Deity, who knows all things, in
the month of April, 1820, the book was entirely completed and
delivered to the binder. It must be acknowledged that, from
the useful facts it contains, the other productions which have
rendered the reign of his Majesty illustrious, cannot be compared
to it. Doubtless it has procured for his Majesty's slave, the author,
under the shadow of his Majesty's power, the numerous rewards
with which his Highness has condescended to honour him.

"May the Deity, whose power is infinite, be till the day of
the last judgment, the support of our lord and master the Em-
peror of Mussulmen, and may he for their benefit perpetuate our
Sovereign's power, and prolong his precious life, Such are the
wishes which I form in honour of the Prince of Prophets."

Immediately after this unique preface a table of the contents
of the three volumes is given, of which we shall give some
account in its proper place. The table is followed by a second
preface consisting of little else than a repetition of what had
already been said by the author. We are there informed that
the production had been before presented to the Sultan Mah-
moud in the year 1815-16, under the title of the " Mirror of
the objects in human anatomy." The author concludes by ob-
serving, that among the causes which have contributed to the
publication of the work, may be enumerated the reproach made
by many persons, of ignorance in the physicians of the Empire,
with regard to the new doctrines in anatomy and medicine.

As to the works of the antients on medicine, and particularly
of the Arabians, they are perfectly known to the Turks, since
they are to be found in all the public libraries. Toderini, in his
time, reckoned more than one hundred volumes in the library of
St. Sophie, independently of the works of Avicenna and Averoès.
They have translated the works of Hippocrates, Andromachus,
Ruffus, Galen, Dioscorides, and the most celebrated masters of

---

* The Turks never commence any undertaking or work of importance without
pronouncing, or writing, this formula—" *Bismíllâh errahmân errahîm.*"
" In the name of the merciful and compassionate Deity."

Greece. The works of European physicians are also not unknown to them, for in the library of Raguib, Pacha at Constantinople, there is a translation of the works of Sydenham, and it is well known that under Mustapha III. the friend and protector of Ottoman literature, a translation of the Aphorisms of Boerhaave was produced, but till the present time, no work on medicine or surgery has been printed.

The first volume of Châni-Zadeh's book contains all that relates to anatomy, and the explanation of the fifty-six plates which, as well as all that he has written, appear to have been taken, in part, from the Italian translations of the works of Bertin and Palfin. The second volume is on the corporeal and intellectual faculties of man, or physiology. The third is on the nature of diseases and the employment of remedies constituting nosology and therapeutics : this is preceded by two prefaces, and an introduction : the first preface contains only a series of quotations from the Coran on the utility of medicine, eulogiums on the sovereign, and apologies of the author for the errors which have insinuated themselves into his production. As it not only gives an insight into the plan and general execution of the work, but also affords a specimen of Turkish ideas on political economy, a selection of several of the more remarkable passages which occur and are clearly intelligible, may not be inadmissible on the present occasion.

As the power of a nation depends on the number of its inhabitants, one of the objects to which the attention of a well-regulated government should be directed, is the care required for the preparation of the medicines destined for the employment and benefit of the people. By these means, the calamities resulting from the diseases sometimes attacking a whole nation will be prevented.*

Under an active and vigilant administration too much consideration cannot therefore be paid to so highly important an

---

* The natural inference which we should be disposed to draw from this reflection is, the necessity of establishing lazarettos among the Turks, on the model of those first instituted by the Venetians, as the only certain means of preventing the annual devastations of the plague. That scourge, which seemed to have suspended its ravages in the Ottoman Empire since the expedition of the French into Egypt, resumed its terrific violence in the years 1811-12. The number of victims to the disease, as we learn from good authority, in these two years, exceeded 250,000, in the cities of Constantinople and Smyrna alone, and since the above period, its ravages have continued there almost uninterruptedly.

object. Hence the care and precaution, which in its wisdom the Ottoman Government has taken for the preservation of its subjects, will be more beneficial to their posterity, than all the advantages and riches, which it might obtain from the conquest of its enemies.

Among the number of desirable ends, towards which such a government must at all times tend, the choice of physicians, who may be fully tried and well-informed, and the confidence which it will repose in them in preference to others, whose ignorance is frequently the cause of disasters, cannot be regarded as an object of indifference. In addition to such considerations, the majority of distinguished medical men, in consequence of their merit and reputation, prefer residing in large cities, so that their distance from the country renders it impossible for them to attend patients living in the remote villages. It is then for Government to obviate these inconveniences, by granting to physicians the necessary protection and encouragement. For a similar reason of remoteness of situation, the troops, as well as the inhabitants of the country, are *deprived of medical assistance*. It is true that there exist, for theoretical and practical instruction in medicine and surgery, druggists'-shops and numerous hospitals, which have been recently established; but medical men, or other persons of a certain rank, whom their situation deprives of the advantage of these establishments, either from their distance, their apprehensions, or any other motives, yet complete their education in an art, of which they already know the theory and practice, by such reading, as restores to them all the information they at any time possessed.*

---

* M. Bianchi informs us, that there have long existed, at Constantinople, hospitals for sick Mussulmen, which are called by the Turks " *Tab'-y-Khaneh*." The greater number of the Imperial mosques have such establishments annexed to them, but the most considerable are those of the Sultan Bayezid Selim and Sultan Suleyman. The following temples have also institutions of the same nature, viz. Khasseki Djamy, Tschinili Djamy, Mihrmahsultane, Djamisi, and Kilidj-Aly-Pacha Djamisi, as well as the Selimie, at Scutari. There are also asylums where patients, reclining on sofas, are dieted in a careful manner, as in hospitals properly so called. The assistance of medicine is entirely neglected. From the word " Nev Idjad," or *new creation*, M. Bianchi was led to suppose that the author, Chani-Zadeh, alluded to establishments founded by the Sultan: but, as M. B. himself had witnessed the dilapidated condition of all the hospitals, after the death of the above sovereign, and as he quitted the Levant in the year 1815, he thought proper to procure the most recent information as to the state of affairs. He was accordingly favoured with a communication from Dr. Maugin, Physician of the French

It is principally with the view of assisting those who are studying medicine, that the author, Châni-Zadeh, resolved to compose his work on the rules of science, the benefit of which he considers infinite. He therefore particularly recommends the repeated perusal of it, in the order in which the articles occur, as the best means of avoiding error and forgetfulness. As the doses of medicines have been determined from the period of infancy to that of manhood, he notices the necessity in their administration, of considering the age, sex, and strength of the patient, as well as the nature of the climate. It is useless, he thinks, to collect a great variety of remedies for the same disease, in order to indulge the caprices of patients : for most of the complicated preparations are to be found in " The Provincial" and other Treatises on Materia Medica. At the end of the work there is a list of various applications, with a reference to all those complaints for which they are necessary. Independently of medical men, the author solicits the attention of those persons who may peruse his work, to dedicate the same proportional attention to the several articles as he devoted to their composition. As the work is intended equally for those out of the medical profession, its technical abreviations may be passed over when they are not intelligible, but, in general, only simple phrases have been employed in subjects relating to general utility. The author disclaims the presumptuous thought, that the advantages of his book will extend to the whole world, though he, at the same time, flatters himself that it will be useful to some individuals. For admitting, says he, that a physician in possession of the work had no other merit than that of understanding it, he would not be capable of doing so much good, as an accomplished medical man. The latter would always be superior to him from his practical knowledge, but, on the other hand, practice alone is inadequate to constitute a learned pro fessional character ; whatever may have been his disposition or opportunities, a profound study of books will be equally necessary. Of these assertions, he considers that the present work furnishes numerous satisfactory proofs. In all instances he desires, as the recompense of his labour, not only the glory of having served his country, but also the satisfactory conviction of his having contributed, by his unremitted efforts, to the general benefit of mankind.

Hospital at Pera, in the suburbs of Constantinople, which is chiefly devoted to the habitations of Europeans. As it contains many satisfactory details of the actual state of the charitable institutions of Constantinople, the letter will be found at the conclusion of this article.

After the second preface comes the author's introduction to Therapeutics, the arrangement of which partakes of that of other works on the same subject : the third and last book concludes with a Pharmacopœa in Arabic and Turkish, containing 319 formula, applicable to all sorts of diseases.

Abridgment of the general Table of Contents. Book I. Anatomy.—Part 1. Osteology; Part 2. Myology; Part 3. Splanchology; Part 4. Angeology and Neurology.

Book II. Physiology: comprehending Natural Faculties, divided into 22 articles.—Corporeal Faculties : in 21 articles.—Of Instinct or the Animal Faculty, 13 articles.—Of Diseases in general.—Of the Nature of Diseases.—The Analogy of Diseases : divided into 8 articles.—On Aversions produced by different Causes.—On the Signs or Characters of Diseases.

Book III. Nosology and Therapeutics, comprehending 208 folio pages, and 55 articles, on separate Diseases.

In the 101 page of this volume Vaccination is treated of, as M. Bianchi says, in an interesting manner, considering that the author is a Mussulman. He dwells particularly on the importance of the discovery, and insists on its advantages over Inoculation, which had been long known among the Arabians. He says, on this occasion, that Small-pox, though before unknown, penetrated into Turkey at the conquest of Egypt by Selim I. The history of Vaccination is given from the work of Dr. Caran,* a German physician, whom he has literally followed.

The author notices the experiments made in vaccination in the year 1800, at the palace of Lord Elgin, at that time the British Ambassador at Constantinople, as well as those instituted at Vienna, in the presence of the Emperor of Austria, and the encouragements afforded by this Sovereign, who caused his own children to be vaccinated. He quotes entire passages from the different treatises on vaccination, by Doctors Ranque, Laurens, Maudine, and Guillotin : he more particularly recommends the work of the latter to those, who are willing to be convinced of the benefits of vaccination. The subject is terminated with a conclusion, which is entirely original, on the mode of performing vaccination, and what is necessary in the operation, of which the principal periods and complications are described. The vaccine lymph is observed not to be always

---

* As the Turks mutilate almost all European names, M. Bianchi is inclined to believe that instead of Dr. *Caran*, Dr. De Caro is here intended, who, according to M. Bianchi, first introduced vaccination into the East.

peculiar to cows, and to be portable : he also informs us, that which was first obtained at Constantinople, came from America, England,* and other countries, but that it is also to be procured in the village of Aïaz Aga, in the neighbourhood of Kiadkhaneh, in the environs of Constantinople, and that from the last source many thousand persons have been vaccinated.

M. Bianchi concludes the present notice by saying, that his intention in giving an account of the work of Châni-Zadeh has only been to shew the first step, which the Turks have taken in a science, which they have hitherto neglected : much, in his opinion, might have been yet said on the performance, had he not been precluded from more completely studying it by its length, and his desire to communicate this Notice to the world, while the original is yet recent. This task would have demanded, in addition to a knowledge of the Turkish language, an acquaintance with the sciences of medicine and anatomy, to which he modestly declares himself an entire stranger. We must, however, acknowledge that he has executed his undertaking with no inconsiderable discrimination and propriety.

The letter of Dr. Maugin to M. Bianchi, on the state of medicine and the hospitals at Constantinople :—

"*Paris, April* 1*st*, 1821.

" Sir,—I send you the information which you requested on the state of the hospitals and druggists'-shops of Constantinople, at the time of my departure, as well as of every thing, which concerns the progress of medical science among Mussulmen.

" In the reign of the Sultan Selim, two schools were instituted at the Arsenal, one for the instruction of pupils in mathematics and nautical science ; another for the teaching of medicine and surgery. The first of them was under the direction of M. Brun, a French engineer ; the second under that of M. Gripili, who is of Greek descent.

" Both these institutions flourished as long as the Sultan reigned, and while his meritorious favourite, the Pacha Hussein, lived, but the death of this admiral, and the dethronement of the Sultan, have involved in oblivion both the noble establishments.

---

* M. Bianchi, although his authority appears to us inferior to that of the author on this subject, seems anxious to correct the present statement, and observes that the first lymph for vaccination was sent from Vienna to Constantinople by Dr. De Carro.

" Barracks were also constructed at the same time, at Scutari, in the faubourg of Pera; those of the Arsenal, and of Topkhana, were restored, and another was erected at Levent-Tchiftlik : so that each was provided with its hospital. They were all well furnished, but particularly those of Scutari and Levant-Tchiftlik : there being an European physician, and a shop for medicines, at each of them.

" At present no traces of such places are to be seen : the barracks and hospitals have been burnt from the spirit of insubordination on the part of the Janissaries, at the time of the revolution of Mustapha Baraïktar, in November, 1808.

" The hospitals of the Arsenal, of Topkhana, and the faubourg of Pera, are now nothing more than chambers of barracks, where the soldier who is ill expires of the plague, or any other complaint, unless nature is successful in the contest. There are two or three quackish practitioners, almost dying of hunger, to whom the *Miri*, or public treasury, allows forty or fifty piastres per month,* in order that it may be said that there are titled physicians at the places. They go much less with the view of treating their patient's diseases, than with that of treating themselves with wine and brandy, which they invariably prescribe for every disorder.

" When the Turkish fleet is put into commission, the disorder is somewhat less, but there is a considerable increase of expense, particularly for the medicine-chests, which the physician causes to be prepared at some druggist's-shop in Constantinople. On this occasion, it is a matter of speculation between the two parties, who have a perfect understanding with each other, and charge a great price for an inconsiderable number of medicines. But custom demands that each vessel should be provided with its medicine-chest, and much economy could not with propriety be instituted in such instances.

" In the end, however, to what utility can all this tend, either on land, or at sea, when well qualified medical men are adequately recompensed for their attendance on the sick on board the admiral's ship alone ?

" At Constantinople there are at present only hospitals for the reception of those affected with the plague, and for patients suffering either under external or internal diseases, which are not of a contagious nature.

---

* The Turkish piastre fluctuates in value according to the exchange : it is at present equal to 7½d., so that the monthly salary of these physicians would amount to about 25s. or 30s.

" The French Government has two : one at Galata, for complaints of an ordinary kind ; the other in the faubourg of Pera, for such of their unfortunate countrymen, as are attacked by pestilential diseases. The Greeks have three great hospitals, of which two are devoted to the plague. The Latins have, in the faubourg of Pera, but a single hospital, which is destined equally for the relief of those suffering with the plague, and with other diseases. These are all the hospitals which now exist at Constantinople : it must be acknowledged that while such establishments do honour to humanity, the individuals entrusted with the direction of those for the plague are accustomed to engage in speculations, no less barbarous than insolent, on what each patient is likely to leave them : for it is a well known fact, that they regard themselves as the universal legatees of all the unfortunate objects that are brought there, and that the death of the patients is the more certain, if they are so unlucky as to possess any money or jewels. In addition to such villany, which deserves the severest punishment, they have the audacity to send for sale, at the bazars of Galata and Constantinople, the spoils of their ill-fated victims ; and these wretches are seen passing along the streets, introducing themselves into the houses, and holding communication with those affected with the plague; going into coffee-houses, drinking punch, and touching, perhaps, twenty persons !

" Many, who are even priests and *soi-disant* physicians, seat themselves at all hours in the day on the sofa in houses containing numerous families, among whom, a few days afterwards, the pestilential disease displays itself ; to which the fathers, mothers, and children, often fall victims.

" No druggist's-shop in Constantinople is directed by a Turk : most of them belong to Greeks, a few to Armenians, and some to Europeans. As this profession requires previous study, the Turks, who have no academies nor faculties of medicine, and who never travel to gain information, feel their incompetency to undertake the superintendance of such establishments.

" It was in the month of June, 1820, that I quitted Constantinople, and since saw with much pleasure, and a lively interest, the work which you shewed me. The great progress just made by the Turks, in the publication of this production, by order of the Sultan Mahmoud himself, at once proves that the Sovereign prefers discountenancing the prevailing prejudices, and that he is in possession of sufficient power to silence fanaticism, which would not have failed to advance loud remonstrances against the impiety of representing human figures : but such complaints might have been answered by the assurance that the plates were not executed with trifling or futile views.

" If reason should ever gain the ascendancy among these people,
the Sultan will establish hospitals, and cause lazarettos to be
constructed at Proti,* an island opposite the capital, in order to
arrest, at the port of Constantinople, the scourge which annually
decimates the Ottoman Empire.

" I have the honour, &c.   " MAUGIN."

ART. II.   *Summa Observationum Medicarum ex praxi clinica
triginta annorum depromptarum.   Auctore Ludov. Josepho
Schmidtmann, Medico apud Mellenses in principatu Osnabur-
gensi.*   Vol. I. Berolini, 1819.   8vo. pp. 328.

IT is with much satisfaction that we take the present oppor-
tunity of giving rather an extended analysis of the first part of
a work which, as its title expresses, is the result of observations
that occurred to the author during a practice of thirty years.
And it is with peculiar pleasure that such productions must
be perused, when it is considered how few of those published
in the present day, have for their object the disinterested de-
sire to impart, in unaffected language, the knowledge acquired
by an extensive experience.   We very much question whether
some impediment has not arisen to the advancement of medical
knowledge, from the desire which so frequently exists of paying
particular attention to uncommon and abstruse diseases, while
those which are continually occurring, and are of the utmost
practical importance, are in a proportionate degree neglected.
The present work seems to be intended to elucidate the latter
class of complaints rather than to detail minutely such as excite
interest, merely because they are rarely to be met with.   With-
out any further preliminary remarks, we shall give a sketch of
the plan adopted by the author, an outline of which is given in
the preface.   He observes that the history of medicine suffici-
ently proves, that as its origin was derived from observations
and experiments made at the bed-side, so its extension and per-
fection must be alone expected from the same sources ; and
every theory, which is not founded on practical observation, is
not only useless, but must tend to obstruct the progress of the
science.   Impressed with these truths he resolved, in becoming

* Proti is one of the Princes Islands in the sea of Marmura, at the distance of
four leagues from Constantinople.

an author, to avoid all empty speculations and hypotheses; but free from the restraint of every system, to relate, in a candid manner, what he had an opportunity of observing in severe and important complaints; to detail every thing which occurred, whether favourable or unfavourable; and lastly, from the accumulated facts, to make deductions consistent with the most correct rules of induction and analogy. He has arranged his matter in the form of dissertations, to which, according to the example of the most illustrious medical writers, Hippocrates, Hoffman, and others, he has subjoined the most striking and instructive cases of the diseases on which he treats. He thinks at the same time, that they should be concise and complete relations. In order to appreciate the improvements which were made in medicine, more particularly as regards pathology and therapeutics, he has united with his own observations, a review of the writers generally esteemed as the most classical on each subject.

If it were consistent with the general plan of this Journal, we could, however, point out many faulty parts in the present book; but as we consider it more desirable in the analysis of publications, as far as possible to select only what is useful, we shall omit to insert any observation on the remains of old doctrines, the employment of obsolete medical expressions, allusions to chemical opinions, long since discarded, &c.

But we must not omit here to express our opinion, that although respect is due to the work on account of the long experience of its author, yet we have been in some measure disappointed in its perusal, for Dr. Schmidtmann has certainly not always kept pace with the advancement which has been made in his profession. The deficiency of pathological observations is also a striking and important defect, which will much diminish the estimation of the volume, both as regards the opinions it contains, and the relation of the cases that are given. Neither is indistinctness of description to be noticed as among the least of the imperfections of the production.

Dr. Schmidtman, being convinced of the great influence of climate, as well as of the disposition and mode of life of patients over their diseases, gives a description in the first chapter of the Medical Topography of the town of Melle, in Osnaburg. The next chapter is dedicated to the consideration of pleuritis and pneumonia, and contains only the knowledge which he gained on those subjects since the years 1794-5, when he contributed an account to Hufeland's Journal of Practical Medicine, of an epidemic of this nature which occurred during that inclement winter. He mentions the extreme frequency of the

disease, either in an epidemic or sporadic form, and attributes it to the mountainous situation of the place. From the years 1787 to 1795, he had opportunities of observing many cases of pneumonia, which were however of a spurious nature, and gave way to the " methodus antigastrica and anti-rheumatica," as he expresses it. He informs us that the severe winter of 1794-5, seemed altogether to revolutionize the comparative frequency of diseases, and to have exterminated gastric disorders, which had till that time chiefly predominated. There can be no doubt that many other diseases have also undergone a general change, both in point of the frequency of their occurrence and the nature of their symptoms. Of this every one must be convinced, who is acquainted with the history of choræa sancti viti, and of syphilitic diseases. Revolutions of a similar nature, confined to particular situations, are still more frequently to be observed, and certainly for many reasons deserve to be considered.

After some practical remarks on the principal exciting causes of pneumonia, he mentions that he has had frequent occasion of observing infants affected with the complaint; that women are as liable to the disease as men; but that in general it is most violent in men of between twenty-five and forty years of age. His experience does not agree with that of Baglivi, in regard to the universally fatal termination of relapses of the disease, as he has seen several instances of the recovery of patients from repeated attacks; they, however, at length fall sacrifices to the complaint. In the course of his practice he has had three cases of the putrid pneumonia, particularly described by Dr. Huxham. All of them proved fatal from a gangrenous affection of the lungs, attended with most offensive sputa. Orthopnœa, diarrhœa, and convulsions are enumerated as most dangerous symptoms, and we are rather surprised not to find Delirium included among the rest of this class, since it so seldom occurs that patients recover from pneumonia after its supervention. To this fact our attention has more than once been excited in instances where no other bad symptom existed to warrant an unfavourable prognosis. After speaking of the difficulty of forming a correct prognosis in all acute diseases of the chest, he relates a case of the wife of a wealthy farmer, an example of the unexpected and fatal conversion of pluritis into apoplexy. He mentions, after bleeding as the principal remedy, the good effects resulting from a combination of calomel with opium, not only in pheumonia, but also in all acute diseases; and his evidence in favour of this remedy is peculiarly worthy of attention, because he states, that when he first heard of the proposal, which he ingenuously ascribes to Dr. Hamilton, he was rather preju-

diced against its employment, from having so often been disappointed in the trial of newly recommended medicines. He was, however, induced to make the experiment at the recommendation of the celebrated Samuel Göttl. Vogel, and the first results far exceeded his expectation ; wherefore, he says, for more than the last twenty years scarcely any case of inflammatory disease has occurred to him in which he had not recourse to the remedy, although not strictly according to the precepts of Dr. Hamilton. In the commencement of such complaints, after he has employed repeated depletion, and when there is a diminution of the patient's strength without an alleviation of the other symptoms, he prescribes a grain of calomel and an equal quantity of opium night and morning, and in obstinate cases in the middle of the day also ; at intermediate times he gives a decoction of the root of senega, salep (the root of certain orchides), with camphor and muriate of ammonia. By these medicines, and blisters to the part affected, he says that the inflammation is generally subdued in the space of twenty-four hours, and with half the loss of blood, to which he was formerly obliged to resort.

In no instance did he continue the calomel and opium so long as to cause ptyalism or diarrhœa, but the effects, which he commonly observed, were a tranquil sleep and a perspiration, attended with evident benefit. To shew that his practice is not only the safest, but also the most efficacious, in obstinate attacks, he relates eighteen cases, which, as in the other dissertations, certainly form not the least valuable part of the book. As the practice of Dr. Hamilton has not been generally adopted in this country, and many facts are not to be found in books, respecting the effects of calomel and opium as general anti-inflammatory remedies, these cases of pneumonia are the more entitled to consideration. The three first present strong examples of the success of the treatment instituted, and particularly in regard to the above combination. The disease appeared under its common form, and therefore no minute account of the symptoms is required here ; but one circumstance must not be omitted, as it is rather singular : it is mentioned after the second case, which occurred in his youngest son, a twin, of six years of age. " I cannot," he remarks, " conclude the case without saying a few words on the singular sympathy which subsisted between this boy and his twin sister. When any disease affected one, the other, in like manner, became the subject of it. In this instance of pneumonic attack, there was an exception to the rule ; but afterwards the sympathy was continued. When, in the year 1808, the boy suffered an acute nervous fever from contagion, and was again on the point of

death ; his sister was immediately affected in a severe degree ; both, however, recovered."

The fourth case is one of inflammatory affection of the chest, accompanying variola, and the fifth, of the same accompanying rubeola. The seventh is a case of a dissolute man, who, after eight days of the disease, appeared to be rapidly recovering. On the eighth day an alarming change took place: in the morning he felt a pain in his left ankle, with an erysipelatous inflammation. Some irregular practitioners, without consulting Dr. Schmidtman, applied fresh herbs to the part, and thus soon brought on delirium. A blister, which had before discharged, ceased to do so, and the erysipelas disappeared. The delirium became constant ; the eyes were stern and fixed ; the restlessness continued : most violent convulsions occurred ; the mouth became spasmodically closed ; the pulse was small, hard, and very rapid : he was carried off in the space of an hour, although the most powerful counter-irritating measures were adopted, such as sinapisms to the feet, and a blister to the neck.*

Besides the above fatal case, three others are related ; but as we have to regret that no dissection of the bodies was made, we shall pass them over without any further notice.

The author, in all the cases which he has cited, attaches much, and perhaps too much, to the appearance assumed by the blood abstracted. When it assumes a buffy appearance, he applies to it the epithet *pleuritic*, which appears to us as improper as to consider it a pathognomonic mark of the existence of inflammation—an error which is occasionally to be observed even in the latest writings. It should, however, always be borne in mind, how little the cupping and buffing of blood is to be depended on, as indicative of the real nature of local and constitutional complaints. We may, perhaps, be allowed to mention that we have had opportunities in the most violent cases of pneumonia, of noticing that the blood presented no manifest difference in appearance from healthy blood, although it had been drawn in the manner most conducive to its undergoing the above mentioned changes. This subject is treated on at considerable length by MM. Parmentier and Deyeux, in Fourcroy's Connoissances Chimiques, Article *Sang*. For

---

* It is remarkable how distinctly Hippocrates has alluded to this kind of case in his Prognostica, Cap. XI. Halleri edit. tom. 1. p. 184. His words are as follows :—ἢν δὲ ἀφανίζωνται καὶ παλινδρομέωσιν αἱ ἀποστάσιες, ἴα πτυέλα μὴ ἐκχωρέοντος, καὶ ἴα πυρετῶ ἔχοντος, δεινόν. κινδυνος γὰρ μὴ παραφρονήσῃ, καὶ ἀποθάνῃ ὁ ἄνθρωπος.

further information we also beg leave to refer to the article Blood, in Rees's Cyclopædia, where similar views will be met with, concerning the changes of the blood in different diseases.

The third chapter is dedicated to the description and illustration of the subject of Peripneumonia notha : it contains remarks on the constitutions most liable to the disease, the time of life at which it commonly occurs, and the causes by which it is generally produced. An analogy is drawn between peripneumonia notha, and that form of pulmonary consumption which is termed Phthisis pituitosa by the Germans, because the expectoration never partakes of a purulent character.* The author considers that these two diseases are nearly the same, and that the only difference between them is, that the former is to be regarded as an acute, and the latter as a chronic, complaint: he says, also, that the one is frequently liable to be converted into the other, and quotes a passage from the Aphorisms of Stahl, which seems to confirm that opinion. Richter also evidently entertains the same idea regarding this subject.

At the conclusion of the present dissertation, four cases of Peripneumonia notha, and one of the Pneumonia pituitosa, are related. Among them is an example of the conversion of the former into the latter disease. The other cases of Peripneumonia notha bear a great analogy to the description of the great English physician, who first distinguished the disease from the others which resemble it. The two first are related with a view to shew, first, the mistake into which some modern Continental writers have fallen in deviating from the practice of Sydenham, by rejecting the employment both of purgatives and bleeding ; secondly, that the rational use of medicines particularly depends on the complications attending the disease. For instance, it not unfrequently happens that Peripneumonia notha is accompanied with great disorder of the digestive organs, and especially with constipation, in which cases mild purgatives are of course required. Sometimes, on the contrary, the disease is conti-

---

* It is surprising how little attention has been directed to this point by English writers in general ; indeed, by the latest of them, it is entirely neglected. The fact, however, must have been noticed by those who have had extensive opportunities of watching patients in consumption, that every variety is to be found, not only in the appearance of purulent expectoration, but that patients also sometimes die hectical, with all the constitutional marks of phthisis pulmonalis, although they at no time expectorate any thing but pure mucus. Of this we have noticed several cases; and are therefore of opinion, that the Continental term Phthisis pituitosa ought to be generally admitted.

nued with inflammatory action in the chest, and with Hæmoptysis, which will be as evident indications for bleeding.

The last case is an example of the complaints produced by the sudden disappearance of arthritic pains from the right shoulder of a lady, in whom Dr. Schmidtmann observed anxiety, dyspnœa, troublesome cough, copious expectoration, and extreme prostration of strength, as the immediate consequences. The complaint afterwards assumed an inflammatory form, but gave way to the treatment which the author instituted. Although venæsection was several times necessary, and the pulse was increased in fulness and hardness, it was remarkable that it never rose above the natural standard in point of number. This fact is mentioned as not uncommon in similar diseases, although it seldom happens in purely inflammatory disorders.

In the fourth chapter are described chronic pleuritis and pneumonia, and particularly that stage of disease which, from its insidious commencement, has long been denominated pneumonia occulta, and, if neglected, terminates in phthisis pulmonalis. Baglivi seems to have been the first writer who distinguished this disease, and called the attention of medical men to it, so as to put them on their guard against its first approach. Dr. Schmidtmann, therefore, makes his acknowledgments to him as having rendered mankind a signal service, because the disease is so common, and hardly admits of any remedy except in its first stage. Other celebrated names are also mentioned as contributors to this important subject. It either arises spontaneously and gradually, or after some other diseases, as catarrh or pneumonia, which have been improperly treated or entirely neglected. Disorders of the digestive organs are enumerated among the other exciting causes, and also the retrocession of arthritic, rheumatic, and eruptive diseases. Women are attacked by it more frequently than men, and the latter from the adult period to that of forty years. As the exciting cause differs, a different mode of producing the favourable resolution of the inflammation must be sought for ; accordingly, a cooling and unstimulating diet must be adhered to, and every thing which may have a stimulating effect is to be carefully avoided. Small venæsections are to be occasionally instituted from the arm, mucilaginous and expectorant medicines, with calomel and opium, are to be given, and repeated blisters are to be applied when there is pain in the chest. This plan is varied, according as there is reason to suspect the existence of tubercles, or of disordered bowels ; or according to any peculiarity in the origin or history of the case. We could have wished that the author had been more explicit in detailing the symp-

toms which characterize this complaint, as it appears of such high importance that they should be well understood, in order that they may be as soon as possible remedied. The deficiency is, indeed, in a great degree supplied by an ample relation of examples of the disease: which was generally characterized by slight fever, dry cough, dyspnœa, thirst, diminution of appetite, and prostration of strength. The cases, however, are not sufficiently striking to require particular notice.

After some general observations contained in the next chapter, and consisting partly of the history of this branch of medicine, and partly of a recapitulation of the subjects already treated of, the author proceeds in regular order to the relation of some cases of empyema, and to some remarks on the cure of that complaint. This term is applied not only to a collection of pus in the cavity of the pleura, but also to that between the pleura and intercostal muscles. Three cases are related, which, as they terminated successfully, may be worthy of being noticed, in order that an opinion may be formed of their real nature; for we confess that we entertain some doubts as to their being genuine. A boy, six years old, became the subject of pleuritis, attended with all the usual symptoms, for which the depletion recommended by Dr. Schmidtmann was not employed, and the other remedies were ineffectual in arresting the disease, and preventing suppuration; hectic fever soon made its appearance, the pain became obtuse, and a sense of fulness and oppression supervened; the respiration became laborious, and when he turned, a distinct fluctuation was heard. Under these circumstances, paracentesis thoracis was proposed, but was not performed, and on a sudden he was seized with a violent cough, accompanied with a copious expectoration of pus, and a corresponding relief of the symptoms. The author is of opinion, that the accumulation had taken place externally to the pleura, but that it had made its way into the bronchia. The patient afterwards perfectly recovered, so as with difficulty to escape the Conscription. In the second case, there was a tumour in the situation of the liver, under the false ribs, of nearly the size of the fist, with fluctuation, extreme pain, great dyspnœa, and fever. Fourteen ounces of pus were evacuated from it, when an opening was made with a lancet; the symptoms were relieved, and the patient soon recovered. Dr. Schmidtmann, however, allows that it admits of doubt whether it was not an abscess in the liver, but at the same time says, that there was too little disturbance of stomach to warrant the supposition. The previous part of the case had fallen under the observation of ano-

ther practitioner, so that its nature is not clearly described by the author. The third case happened in a man, fifty-two years old, who was first seen by Dr. Schmidtmann, after the termination of an inflammation of the lungs: he had become very much emaciated and hectical. He expectorated a large quantity of purulent matter, and on his left side, between the ninth and tenth ribs, he felt a constant pain, which was increased by pressure; he also had great dyspnœa and œdema of the feet. After some days a soft and fluctuating tumour, of considerable size, made its appearance close to the part in pain; when this was opened, about a pint and a half of pus flowed out immediately, and a large quantity more was discharged. An alleviation of the dyspnœa, hectic and cough, was thus produced, and the man gradually but completely recovered. Dr. Schmidtmann is disposed to ascribe all the benefit, in the two last cases, to the institution of issues in the neighbouring part. He concludes this chapter with some general remarks on empyema, and numerous references to writers by whom instances of recovery from the disease are related; but we shall pass over them and the two following chapters, in order to give an account of an epidemic dysentery described in the tenth chapter. This epidemic dysentery raged at the town of Melle during the latter part of the summer and autumn of the year 1800.

The situation of the town of Melle is, in general, very healthy, from its elevated position, and its freedom from large woods and stagnant waters. From the year 1788, dysentery was not frequently met with, and then affected only a small number of people, few of whom were lost. In 1800, the complaint prevailed in a proportionably severe degree, and extended throughout all Germany. The peculiarity of the season is assigned as a probable reason of this occurrence. The preceding winter was very cold, but in the middle of March the ice and snow were thawed, after which an unparalleled heat continued through the whole of April and greater part of May. On the 17th of April, it was hotter than is usual in the dog-days. Towards the end of May the cold returned, so that it froze in the night, and a complete November scene appeared, and continued till the 27th of July, when the days became burning hot, and nights very cold, till the end of September. The author admits that these vicissitudes were the chief occasional cause of the disease, but believes that they did not operate alone, otherwise he is unable to explain how such people as avoided the cold and contagion, and others, who were confined to their beds with disorders of a different nature, also became affected with dysentery, as he observed in many instances. Neither can he understand how

the small town of Iburg, and village of Reimsloh, situated within half or a quarter of a mile of places where the dysentery raged in every house, should be unaffected by it, although the inhabitants were placed under similar circumstances with regard to food, manner of living, and exposure to those affected with the disorder. He endeavours to explain these phenomena by the supposition that some contagious matter existed in the atmosphere, which was not contained in the air of the above mentioned places. At first, the disease extended, slowly affecting individuals here and there only till the middle of September, but afterwards it spread with dreadful rapidity, sparing very few houses. Many individuals enjoying good health in the morning, became affected in the afternoon with this most distressing complaint. The town of Melle, and the neighbouring situation, presented the wretched aspect of an extensive hospital. The depression which the complaints of the sick produced, in addition to the anxiety which already existed in people's minds, acted in extending the disease. The accounts produced so great an alarm among the neighbouring towns, that the infected situations were avoided, as if the plague was raging there ; many feared to enter the city, many quitted it, and many returned home; for, on several days, from seventeen to nineteen deaths took place. It was particularly severe among the lower classes of people, although it entirely spared no rank; it more frequently attacked females and infants, in whom it generally proved fatal. Few were forewarned of the approach; some were affected with diarrhœa, obtuse tormina, shivering thirst, anorexia, coryza, cough, &c., but the greater number were seized while in a state of health. It generally began with severe pains in the abdomen, particularly in the umbilical and left inguinal regions : these pains were constant, and remained in the same situation, were increased by pressure, and also by the weight of the bed clothes, and often changed into an intolerable sense of heat; they were increased by the slightest motion of the body, but alleviated by bending the body forwards, a position which was chosen by patients. In many cases, these pains occurred only at intervals, or before evacuations, and at other times, they could bear considerable pressure on the abdomen. Some were not affected with pain, but passed their stools with slight tenesmus only, which was always a most unfavourable symptom, and indicative of the putrid tendency of the disease. In some instances, the patients were affected with a most painful and constant desire of going to stool, and passed fæcal evacuations of different kinds, or mucus occasionally, with a mixture of

blood, and at other times pure blood ; sometimes nothing was passed, but the severity of the tenesmus still continued.　Occasionally, mucous scybala, of the size of the fist, were voided. The evacuations frequently partook of a peculiar animal odour, distinct from that of fæces in general ; it was sometimes so pestilential, that men, slightly sensible, incurred the danger of fainting when exposed to it.　" Ut homines parumper sensiles periculam incurrerent, eo deliquio animi corripi."　In the course of one night, some patients went to stool eighty times, by which evacuations the poor creatures, reduced almost to skeletons, were caused to faint by any motion.　Many were affected with vomiting at the commencement, which soon subsided, but some vomited throughout the whole disease all their food and medicine, and this Dr. Schmidtmann observes, was a particularly unfavourable symptom ; most of them never vomited ; but some, from the first, had a bitter or putrid taste in their mouths, but in many a depraved taste only supervened in the course of the disease ; in very many, the sense of taste was not in the least affected.　In two cases, the author observed aphthæ affecting the mouth, palate, and tongue ; and remarks, that they forebode a fatal termination of the complaint.*

The appetite of the patients frequently failed, and when this happened, the tormina and purging was much increased by their taking food, but in some instances digestion and assimilation were performed throughout the whole disease ; there was also every variety, in different individuals, as to the intensity of their thirst, fever, and the severity of the state of the pulse.　In those affected with the putrid dysentery, the pulse was so indistinct as not to admit of being counted ; the fatal termination was pointed out by a complete coldness of the extremities—" Manus atque pedes ægrorum marmorei erant frigoris,"—some days before death, with an imperceptible pulse, although the ability of moving the parts remained perfect.　The secretion of urine was diminished, it was also an unfavourable symptom when the micturition was painful.　Worms were always a dangerous complication of the disease, from the continual tenesmus they excited.　In some infants a prolapsus of the rectum was the result ; in one an inguinal hernia took place from the same cause ; in a woman a paralysis of the arm, at the commencement, was followed, according to the author's prognosis, with

* Sydenham, Zimmerman, and Degener in his work on Dysentery, particularly allude to this fact.

an unfavourable termination of the disease : very few individuals purged mucus only ; the admixture of blood with the fæces was not an unfavourable symptom, but appeared rather to mitigate the inflammatory disposition of the complaint. In some cases towards their termination, a difficulty of breathing and speaking came on, which was followed by inevitable death. When miliary eruptions took place, as sometimes happened, contrary to what might have been expected, they were not followed by any alleviation of the disease. In several patients the prostration of strength supervened with wonderful rapidity, so that they were, ad " moriendum exhausti," as the author expresses it, in the course of three or four days. In some, the duration of the complaint was prolonged to four, six, and even eight, weeks ; after which latter period a few persons recovered. Two cases of putrid dysentery recovered, although they were subsequently followed by gangrene of the legs. Anasarca and ascites were frequent terminations of the complaint, from which all but three patients that were attacked, recovered. The eyes, head, and knees, became in several individuals sympathetically affected, and then the dysentery was always alleviated : the same beneficial effect was remarkable from copious perspirations, as other authors have also particularly noticed. The tormina tenesmus and purging were soon removed, and indeed patients never got well in whom this favourable symptom did not make its appearance. Dr. Schmidtmann is also of opinion, that a copious secretion of urine sometimes puts an end to the complaint, and that any sympathetic affection of the skin produced great and immediate relief. In one individual, death was produced by a conversion of the disease to the chest, and it was remarkable that children generally died in convulsions, with which the dysentery was frequently complicated. The epidemic appears to have been very severe, if we are to judge from the mortality which resulted ; for, in the ecclesiastical diocese of Melle alone, comprehending a population of 5,150, one hundred and fifty-one lives were lost ; and in the principality of Osnaburg, including a population of 126,000, more than fifteen hundred fell sacrifices to the disease. The great number of deaths, however, is in some degree accounted for by the insufficiency of medical advice received by the lower orders, together with their custom of undertaking their own treatment, which generally consisted in the liberal administration of spirits and fermented liquors. Of 282 patients whom Dr. Schmidtmann attended with the epidemic, he lost six-and-twenty with the disease itself, and two with consecutive affections : this

number amounts by calculation to 9⅔ in 100, but among them only six were affected so severely at first, as to warrant a decidedly unfavourable prognosis.*   Six of those who died were infants, to whom the proper remedies could scarcely be administered.   The dysentery assumed all characters even in the same house, such as those of the simple, bilious, inflammatory, and putrid kind; they mutually associated with and converted into each other.

We pass over some observations of the author on the causes of dysentery, to notice the remaining facts which he has detailed.   He informs us, that the disease is not so contagious as was formerly supposed, an opinion which he had advanced previously to the commencement of the epidemic, and in which he was confirmed by attention to its progress.   In many families and habitations only a single individual was affected, though others were equally exposed to it.   Many mothers continually attended their children who were ill with it, but they escaped unaffected.   Dr. Schmidtmann himself was frequently exposed to the dysenteric effluvia, and was equally fortunate; indeed, from experience, he was induced to believe that the bilious and inflammatory forms are wholly destitute of any contagious tendency; but of the putrid dysentery he was led to form a contrary opinion, for where one person was the subject of it, many others also sickened, and indeed it extended to the whole family.

It would be unnecessary to follow the author throughout the details of the treatment of the disease, with the same care that we have taken in giving an account of the disease itself.   He generally found that the administration of emetics, at the beginning of every species except the inflammatory, was attended with benefit.   He afterwards gave purgatives, but particularly objected to the employment of rhubarb, under the impression that it increased the tormina and tenesmus.   He most frequently preferred a kind of artificial castor oil, the invention of the celebrated S. G. Vogel, because it is extremely mild in its operation, and is not expensive.†

---

* Hufeland, in the first volume of his Journal of Practical Medicine, p. 80, informs us, that of ninety patients affected with dysentery, he lost eight.

† This consists of nine grains of the spirituous extract or resin of jalap, three grains of Venetian soap, triturated in a mortar, with an ounce and a half of oil of olives, poppies, linseed, or almonds.   The dose is a table spoonful every, or every other night, for an adult.   It may not be a bad substitute for castor oil, when the

After purging with this medicine, the author tried the employment of nux vomica, which has been particularly recommended by Dr. Hufeland, on account of its beneficial effect in the dysentery that occurred at Jena, in 1795, given in doses of two or 2½ grains every two hours to adults : it sometimes allayed the pain, though in a few individuals it increased it ; so that the author much preferred the use of the extract of poppy or laudanum for adults, and of pulv. ipec. comp. for infants, as anodyne remedies.

When the disease partook of an inflammatory character, it was treated in the same manner as enteritis ; only the most gentle purgatives, were, however, administered in these instances, as Dr. Schmidtmann seems to agree with most of the Continental physicians of the present day, in imagining that active remedies of this kind are improper in any inflammatory affections of the abdomen. This part of their practice must be generally regarded as offering a contrast with that usually adopted in this country, not less remarkable than that which is to be frequently observed with regard to the extent to which bleeding is carried. In five cases the dysenteric enteritis was accompanied with what the author calls very dangerous nervous symptoms, continual vomiting, excruciating pain, and prostration of strength ; they all terminated fatally, being apparently beyond the reach of art. Although, in England, the distinctions between inflammatory and putrid dysentery have by some writers been considered as groundless and fanciful, Dr. Schmidtmann goes a step further, in refinement, and makes a distinction between what he terms the nervous and putrid species of the complaint. In twelve of his patients anasarcous affections succeeded the dysentery, but he only lost three out of that number. At the end of the present account is subjoined the concise relation of ten of the most remarkable and interesting cases. These are followed by some general observations on the nature, and an historical survey of dysentery, and the improvement, which has, in modern times, been made with regard to the mode of treating the disease.

The eleventh and last chapter of the present volume is devoted to a dissertation on gout, with the relation of numerous cases, followed by a general exposition of the opinions and practice

---

latter is not to be procured free from rancidity, which is sometimes the case. Dr. Schmidtmann speaks in high terms of its beneficial operation, particularly in Dysentery ; he says it allays the pain and severe excitement of the intestines, but at the same time gently and completely evacuates their contents.

of preceding writers on the subject, as well as original obser-
vations on the febrile symptoms which attend, and on the ano-
malous forms of the complaint.   But, besides that this subject
appears to be nearly exhausted from the care with which the
disease has been at all times, and more particularly within the
last few years, investigated and described, we are disposed to
consider this as the most obsolete and defective part of the
work, and shall therefore pass it over by requesting merely to
refer such of our readers, as may be disposed to peruse it, to
the numerous cases related, which may, perhaps, be the only
part that can be read with advantage.

  We cannot conclude this article without expressing our wish
to see the publication of the other volumes of a book, which
we think, notwithstanding its various imperfections and defi-
ciencies, must, at least as far as the plan goes, be considered as
a model for practical works in medicine, and is certainly the pro-
duction of an individual who has had a very extensive course of
observation.

ART. III.   *Mémoire sur les Hémorrhagies internes de l'Utérus,
  qui a obtenu le prix d'Émulation au Concours ouvert (en 1818),
  par la Société de Médecine de Paris. Par M*^{me}. *Veuve
  Boivin, &c. &c.*   Paris, 1819.   pp. 188.

  THE lady, who is the highly-cultivated and experienced
author of this prize Essay, before she enters on the consi-
deration of the principal subject, devotes several chapters to
the description of the uterus and its appendages. She describes,
at some length, the various changes which those organs undergo
at the periods of menstruation and pregnancy.

  These preliminary considerations are remarkable for their
perspicuity and good arrangement, and are followed by other
remarks on uterine hæmorrhages, independent of pregnancy,
and on those occurring during gestation. The section which
treats of the hæmorrhage caused by the attachment of the pla-
centa over the os uteri, is derived chiefly from the masterly,
but perhaps unequal, work of Rigby, and exhibits an excellent
epitome of the subject. The next section is on the hæmorr-
hage resulting from the partial separation of the placenta : it is
here remarked, that if, by the examination according to the mode
recommended by the above author, it is found that the mem-
branes, and not the placenta, present at the orifice of the uterus,
he advises, when the hæmorrhage continues unrestrained by re-
pose, fresh air, &c. *always* to rupture the membranes as soon

as possible. This means has, on all occasions, proved successful with him, and during a practice of forty years he has never found it necessary either to effect artificial delivery, or even to plug the vagina. " But, " observes Mme. Boivin, " the examination of the facts related by the author, and daily experience, prove that the rupture of the membranes does not always produce the desired effect—the suppression of the hæmorrhage, and the expulsion of the fœtus." The opinions of authors, in general, are at variance on this point; by such as have found the practice successful it has been advocated, but by others, who have found it fail, it is proscribed. If we are not certain that the presentation is natural, our author questions the propriety of rupturing the membranes; for when the liquor amnii is once evacuated, how can the hand be introduced into the cavity of the contracted uterus for the purpose of turning, except with great inconvenience to the accoucheur? It is then a matter of greater moment to preserve the membranes in a state of integrity under these circumstances, than where the position of the child is unnatural without the complication of hæmorrhage. Besides, when the presentation is faulty, the uterus contracts irregularly, and the result may be, that after the evacuation of the liquor amnii certain parts of the fœtus may be strongly compressed, while others are less so; and if the separated portion of the placenta, corresponds to the part of the child which experiences only a slight compression, the hæmorrhage continues as before, although the uterus is firmly contracted on all the other parts of the fœtus. We cannot, therefore, but cordially agree with the conclusion to which Mme. Boivin comes, that if the hæmorrhage has proceeded to an alarming extent, it is only when the whole hand is introduced into the cavity of the uterus with a view to bring down the feet of the child, that the operator should think of rupturing the membranes. We may also be allowed to add, that examples have fallen under our own notice, in which the rupture of the membranes, by failing to excite the contraction of the uterus, has been entirely inadequate to arrest the flow of blood. In one instance, indeed, too confident a reliance in the precepts of Rigby on this subject, caused us to incur the most imminent danger of losing a highly valuable life. And how should it be otherwise, when instances are by no means uncommon, in which, instead of the production of active and efficient uterine, contraction by the evacuation of the liquor amnii, several days, and even weeks, elapse before the patients are delivered: during the whole of which period hæmorrhage might take place, if the placenta were partially detached. We would, however, make a careful distinc-

tion between the premature discharge of the liquor amnii and that of the liquor chorii, which, according to the best authority, sometimes takes place in such quantity, and with such force, as to admit of being mistaken by the superficial observer, and of being confounded with the liquor amnii.

In speaking of uterine hæmorrhage during labour, the author, in our opinion, objects with great propriety to the employment of stimulants, till such time as the discharge of blood shall have discontinued by the compression of the vascular orifices. By repairing, at this period, the loss of blood which patients have experienced, the action of the uterus is excited, and the two last periods of labour are accomplished.

Madame Boivin also insists, with justice, on the necessity of extracting very gradually the body of the child, or rather of leaving it to be expelled by the efforts of nature : by this means the orifices of the neck of the uterus are prevented from contracting before the body of the organ has attained the diminution of size, which is necessary after delivery. We are disposed to believe that the neglect of this precept is the cause of the hæmorrhage, which most commonly happens after delivery.

After the above observations the author enters upon the second part of her work, which has for its immediate object, to answer the question proposed by the Societé de Médecine, viz. " to determine the cause and treatment of internal uterine hæmorrhage, which occurs during pregnancy, labour, and after delivery." We may remark, that this part of the book is distinguished by several useful inquiries, and interesting discussions on important points in midwifery. At the commencement the author speaks of the retention of the menstrual discharge from the permanent obliteration of the genital parts, and mentions, among several others, two cases which recently happened, of complete imperforation of the orifice of the uterus, which presented themselves to two celebrated surgeons in Paris. An incision was made into the inferior extremity of the uterus, and in each instance the consequences were fatal. A case is also cited, which was related by Baron Larrey in the Rapport-général de la Societé Philomatique, tom. i. p. 86, of a patient, in whom the extension of the integuments in the neighbourhood of the genital parts, opposed the escape of the menstrual fluid.

We may here take an opportunity of mentioning that the professional reading and general erudition of this lady have not only enabled her to translate Rigby's and Duncan's works on Uterine Hæmorrhage, but are also constantly of service in enabling her to quote cases from Latin and Italian, as well as from English authors.

In speaking of the retention of the menses from imperforate hymen, she takes an opportunity of citing ten cases from various obstetrical writers ; she also relates one instance in which she herself made the requisite punctures for the evacuation of the accumulated fluid.*

Our author, in some remarks on the same subject, observes, that we ought not to forget that the presence of the first menstrual fluid in the uterus becomes of itself an irritating cause which excites the organ, and determines to it at each period an additional quantity of blood ; the developement of the vessels at the same time taking place, the menses assume the character of a true internal hæmorrhage, of which the consequences may be very serious. It is equally evident from these considerations, with how much reserve it is necessary to pronounce on the existence of pregnancy, with which these cases have such an intimate connection. The presence of the hymen, however, or the obliteration of the orifice of the vagina, cannot be sufficient proofs of the non-existence of pregnancy, since several writers are cited by the author, in whose works a multitude of examples are mentioned of women having become pregnant, notwithstanding the integrity of the above membrane.†

While treating on internal uterine hæmorrhage, dependent on pregnancy, Madame Boivin considers that this accident is extremely uncommon during the first six months of utero-gestation. She also asserts the impossibility of its proceeding to a fatal extent, at the same time that she notices a case related in the Journal de Médecine, Chirurgie, et Pharmacie, for May 1811, in which internal hæmorrhage is said to have happened at the period of three months, and to have caused the death of the patient. This accident, it is observed, could only have been the effect of some other unknown cause, independent of the hæmorrhage.

It is particularly towards the conclusion of the period of preg-

---

* We may, perhaps, be excused for mentioning on the present occasion, that, although in these instances, as well as in other collections of extravasated blood, the fluid generally undergoes no putrifactive process, an example was lately related to us by a distinguished surgeon of this city, in which a collection of blood in an aneurismal sac, though not in contact with the air, had proceeded into a state of putridity.

† "Ambroise Paré, Hildanus Cent, 181. obs. 60. Ruysch, obs. 22. Mauriceau, obs. 439. Beaudelocque, et beau-coup d'autres, rapportent de ces cas de grossesse accompagnés de l'obliteration du Vagin ou de la presence de l'Hymen."

nancy that internal hæmorrhage is liable to occur. In fact the
uterus, as well as its vessels, having acquired a greater volume,
the organ is more easily and rapidly distended ; the membrane
of connection being more extended, and thin, is ruptured with
greater facility by the too violent determination of blood. But
most frequently it is the head of the child, which obstructs the
orifice of the uterus ; or the orifice may be so closed by the
effusion of the lymph, which takes place in such abundance, and
thus an obstacle, though inconsiderable, may be afforded to the
escape of blood from the cavity. These causes are considered
by Mme. Boivin to explain the occurrence of internal hæmorr-
hage ; and she subjoins those which are generally supposed to
the most frequent, but which she believes to be the most rare
causes, namely, the unnatural adhesion of the placenta, or of a
portion of the membrane lining the uterus. At no term of
pregnancy, however, can the uterus, while containing the pro-
duct of conception, admit a volume of blood so considerable as
when it has been recently emptied ; nor does she believe that
the quantity can be sufficiently great to occasion death. In the
account of all the instances on record, she says the authors speak
in an inexact manner of the quantity of blood which has escaped
into the cavity of the uterus, and if allowance were made for
exaggeration, the statements would be much diminished. In
women who have been said to have died in this manner, the
uterus has also been the only part to which attention has been
paid, and the neglect in examining the other parts of the body
leaves just grounds for the foundation of doubts as to the real
cause of death. Besides, we cannot reconcile the idea often
entertained of the gravity of this accident, with the precept
generally established, of plugging the vagina to put a stop to
the external escape of the blood. There are, however, some
practitioners, as Mme. Boivin observes, who entertain these con-
tradictory opinions, although, if internal hæmorrhage during
utero-gestation can prove fatal, to propose the above remedy is
ridiculous.—" c'est proposer de tuer la malade pour la guerir."
When, however, the liquor amnii is recently evacuated, and the
fœtus is in part expelled from the uterus ; if from the deficiency
of contraction of that organ the expulsion of the rest of the body
goes on very slowly, and the hæmorrhage continues, the accu-
mulation of blood might become much more considerable than
before, since the inactive uterus, by becoming a second time
distended, might allow that space to the blood which was pre-
viously occupied by the liquor amnii, and the part of the child
that had been protruded ; in the same way as very frequently
happens after the complete expulsion of the whole product of

conception. But internal hæmorrhage in such instances is always a very serious accident, as the child is extremely endangered, the patient very much debilitated, and that inactivity of the uterus often induced, which after delivery not unfrequently proves fatal. From such a view of the subject, it is obvious that the bleeding requires the most serious attention, and the greatest diligence in the employment of the means proper for obviating its ill effects; for this purpose, in hæmorrhage after the seventh month, our author says, that regard ought to be paid to the questions—whether the action of the uterus has taken place at all,—whether it has commenced, but diminished,—or whether it has totally subsided. In the first and second cases it is necessary that we should excite the uterus to a vigorous contraction, and in the third, that we should entirely supply the deficiency by the partial extraction of the bodies which maintain its inactivity. Nor is it less important for us to examine the state of the os uteri, to investigate the nature of the presentation, and the degree of mobility of the child.

To illustrate the subject still further, three cases are selected, from the works of Mauriceau, Perraud, and Baudelocque, and Mad^{me} Boivin adds such remarks on each, as sufficiently display the penetration, and vigour of her mind, as well as her intimate and practical acquaintance with the above occurrences. After the delivery, the introduction of the hand into the cavity of the uterus, and the application of a bandage round the abdomen of the patient, are recommended; and, at the same time that the organ is excited internally by the slight motions of the hand, friction is to be employed on the external part of the abdomen. " The uterus ought not to be freed from the coagula, and from the placenta, except in proportion as the viscus is perceived to contract on the hand. The hand is to be allowed to remain until it is expelled from the cavity by the contraction." We are, however, a little at a loss to understand what purpose the presence of grumous blood and a flaccid placenta can serve in this instance. If the author expects that they should excite the contractions of the uterus, the idea would be generally considered as singular, when their presence in the cavity is of itself so frequently the cause of hæmorrhage. If it is imagined that the removal of these bodies would be prejudicial, by giving rise to additional bleeding to supply their place, we cannot but consider that the error is equally great, since the only means of preventing or arresting the flow of blood is to be sought for in that complete and energetic action of the uterus, which is never in the least favoured by the means here suggested.

In the chapter on internal hæmorrhage during labour, Mad^{me}

Boivin gives the following enumeration of the symptoms indicating the existence of the accident, viz. the progressive, and more or less rapid, tumefaction of the *uterine globe ;* in the interval of the pains, the escape of solid coagula from the external opening ; pallor, vertigo, yawnings, tinnitus aurium, faintings, &c. After these symptoms, which are related as characteristic of hæmorrhage occurring by the separation of the placenta, an attempt is made to form a distinction between this accident and that resulting from the brevity of the umbilical chord ; but as we are of opinion that this is unsuccessful, we shall not notice it. We would, however, particularly insist on the importance, and indeed on the absolute necessity, of attending particularly to the constitutional symptoms of uterine hæmorrhage, as, though all local signs have been deficient, the loss of blood in many instances has been sufficiently great to produce fatal consequences. From the extensive opportunities of practice, which have fallen to the share of the author, we must confess that we had expected some useful observations on this most interesting point, but we are not a little disappointed in finding it passed over without notice.

When in these cases the uterus ceases to act, the membranes are ruptured, and the circumstances will allow of the application of the forceps, we are enjoined to extract the head by them but not the rest of the body ; for, observes the author, we must always recollect that the cessation of the hæmorrhage does not alone depend on the depletion of the uterus, and that if it were only necessary to empty this organ for the purpose of arresting hæmorrhage the accident ought never to take place, either after natural or artificial labour ; but, on the contrary the permanent contraction of the uterus is the only object to which the treatment ought to be directed with a view to prevent those relapses, after delivery, which are always so quickly fatal. It is in cases of twins and triplets that danger is to be particularly apprehended, as the plurality of placentas occupying the sides of the uterus, to a greater extent than when there is only one, the hæmorrhage must of course increase in a corresponding degree. After the expulsion of one fœtus, the orifice of the uterus may be obstructed, and thus an obstacle may be formed to the external flow of blood, so that the accumulation within may continue and increase until the evacuation of the uterus is entirely completed. But it is necessary after the first birth, if possible, to excite the uterus to expel the rest of its contents ; for which purpose, Mme. Boivin particularly recommends the application of a tight bandage round the patient's abdomen, as well as the institution of all the other means commonly employed for preventing the internal accumulation. The liquor

amnii of the second fœtus should also be evacuated by a small puncture, in order to allow of its gradual escape, and the adaptation of the uterus to the diminished volume of its contents. But if the second presentation is improper, it becomes necessary to turn, which is the more easy, as the children are generally smaller on these occasions.

In the chapters on the hæmorrhage, which is supposed to be occasioned by the rupture of the umbilical chord, the author, after mentioning several instances of the extreme shortness of the chord, in none of which it was ruptured, proceeds to a critical examination of several examples in which this accident was supposed by Delamotte, Levret, and Baudelocque to have taken place. It is evident that Delamotte mistook the nature of his case, as the hæmorrhage did not take place before the rupture of the membranes : it appears to have depended on the partial separation of the placenta, which very probably was attached in the neighbourhood of the os uteri, for he remarks that the bleeding was augmented by every pain. He also says, that there was no hæmorrhage after the birth of the child, a circumstance which, according to Mme. Boivin, sufficiently shews that it must have taken place externally to the membranes ; since, if the blood had been furnished, as he imagined, from the umbilical vein, the coagula accumulated within the amnios, would have immediately followed the child, if they had not made their escape before, which might have been less probable.

In Levret's case, it is almost certain that there was no hæmorrhage during the labour, which did not begin till the ninth day after the evacuation of the liquor amnii, and required the assistance of the forceps for its completion ; but there certainly does not appear a greater probability that the umbilical chord was ruptured during the process, though when he grasped it with his hand, he says, it came away detached from the placenta. He then introduced his hand into the uterus, in the cavity of which he found many coagula, and after extracting these he discovered that there was a partial inversion of the uterus, which he replaced. This circumstance seems to be justly considered by our author as proving that the rupture of the chord partly, if not entirely, took place by the unguarded efforts employed for the extraction of the placenta. The inversion of the uterus is also to be regarded as the true cause of the hæmorrhage which occurred.

According to Baudelocque's account, the labour, which had been preceded by considerable hæmorrhage, had scarcely commenced, when at each pain a small quantity of fluid blood was expelled. Afterwards, an abundance of coagula escaped, both before and after the liquor amnii : repeated fainting

and convulsions were thus produced, and apprehensions were excited lest the woman should expire before she could be delivered. Finding that the breech presented, Baudelocque became desirous of disengaging the umbilical chord from a state of tension, and to his surprise perceived it give way with the slight effort he employed for its disengagement. It was evident, as he thought, that the largest branch of the umbilical vein had been ruptured for some time, and that the arteries had been more recently torn near their insertion into the placenta.

This seems to us the case to which the least objection can be offered, although Mme. Boivin is not disposed to consider it as genuine. If however, she adds, the careful examination of the above examples does not lead to the conclusion that the opinion generally entertained of the possibility of the rupture of the umbilical chord before that of the membranes is incorrect, it must at least be acknowledged that the symptoms of the accident are very equivocal and uncertain. At all events the treatment would not be different from that resorted to in other cases of violent hæmorrhage before labour, namely, the turning of the child.

A short chapter is devoted to internal hæmorrhage, caused by the rupture of the uterus and vagina, after which that resulting from extra-uterine conceptions is considered. In addition to the cases of this nature, which are selected from numerous writers, the author, from her extensive practice at public Institutions,* has herself had an opportunity of witnessing three examples of the accident. In one instance, the woman went to the full term of gestation, and died after the performance of the operation of gastrotomy ; there was a complication of uterine pregnancy with the extra-uterine conception in the second woman, who went to the seventh month ; the third case terminated fatally at the sixth month of gestation. Besides this cause of internal abdominal hæmorrhage, we are informed that it has been found at the Hospice de Maternité to have been produced by a diseased state of the vessels of the ovary, and of the iliac veins, as well as by the rupture of the psoæ muscles during labour. For the treatment of these cases, the author gravely recommends the application of vinegar lotion to the lower part of the body, and the internal administration of opium and digitalis, to check the violence of the circulation, and facilitate the formation of a coagulum at the extremity of the bleeding vessel.

At the end of the chapter on effusion of blood into the labia during labour, and on varicose veins, the two following cases are

---

* She is at present Ex-surveillante en chef à l'Hospice de la Maternité; and Maitresse Sage-Femme Surveillante en chef de la Maison Royale de Santé.

related :—A young woman, of a lymphatico-sanguineous temperament, had varicose veins in her left leg after her first confinement, which took place three years before ; she also had a slight ulcer near the internal malleolus. She employed a laced stocking which relieved her ; but ever since, her menstruation has become more copious and frequent.

An unmarried female, having been pregnant five months, had numerous varicose veins; she employed a laced stocking, and some time afterwards she had uterine hæmorrhage, which brought on a miscarriage. Having again become pregnant, she had recourse to the same means, and the same effect resulted. The hæmorrhage having recurred several times in the course of two or three years the double cause of the accident was discovered, and the woman, in the remedy which had been recommended for the varicose veins, having found the means of producing abortion, whenever she became with child, was at length dismissed from her place.

These cases seem to point out the necessity of applying powerful compression, under similar circumstances, with considerable caution, a practice against which the author entertains a decided objection.

Mme. Boivin divides hæmorrhage after labour into two kinds. 1. That in which the action of the uterus is only suspended, irregular, or insufficient for the perfect separation of the placenta ; in which also, as the placenta affords an obstacle to the contraction of the uterus, and its presence keeps up and augments the hæmorrhage, its removal is only required. 2. That hæmorrhage, which is dependent on the inactivity of the uterus, and in which the presence of the placenta is the effect, and not the cause, of the bleeding ; in such circumstances, she thinks it is necessary to direct our attention to the uterus rather than to the placenta. The first of these divisions is called hæmorrhage from *Retention*, the second from *Inexpulsion* of the placenta.

The placenta may be retained by its unusual magnitude,* by the spasmodic contraction of one side of the uterus, or of its orifice ; lastly, by a partial or entire adherence to the situation where it is attached. In describing the treatment of the retention of the placenta from the irregular contraction of the uterus, the author supposes that the practice of giving large and repeated

---

* This is certainly obviated, in a great degree, by tying the funis with a single ligature only, after we are assured that there has been but one child in the uterus. The blood then passes with facility from the distended placenta, especially if it is at all compressed by the uterus.

doses of tincture of opium has become universally adopted in England, " les praticiens Anglais dans ces sortes de cas, commencent par donner le laudanum à grandes doses ; cinquante à soixantes gouttes à-la-fois, dans une liqueur alcoholique, telle que le vin ou l'eau-de-vie, et que l'on réitère si le besoin l'éxige."

Hæmorrhage from retension of the placenta, by an unusual adherence to the uterus.—This cannot take place to any considerable amount without a partial separation of the placenta. But in all instances where we cannot produce its entire separation, we are advised to prefer waiting a time, to see how far nature, assisted by frictions to the abdomen, cold effusions, &c. will act, instead of using too violent efforts, incurring the danger of detaching portions of the sides of the uterus, and of thus producing an inflammation of the viscus, which must sooner or later prove fatal. By too great haste in these instances we also run the risk of rupturing the umbilical chord, and of inverting the uterus. Our principal object should, therefore, always be to excite the organ to contract in a regular and perfect manner, which is the only means of preventing, and putting a stop to the recurrence of the accident.

Hæmorrhage from inactivity of the uterus, or from inexpulsion of the placenta.—Our author here observes, that whatever may be the cause of the inaction of the uterus, it is evident that the presence of the placenta within its cavity only operates secondarily, and if the above organ has recovered its power of contracting, the bleeding would he arrested, and the placenta be expelled. " It is then with justice that Professor Dubois opposes those who suggest the early removal of the secundines, since this is a means of augmenting rather than of diminishing the danger." She also contends, that should this inactivity precede or follow the too sudden depletion of the uterus, it is not by evacuating its cavity that its contractile power can be restored. Nor is it by removing from the vessels of the uterus the only support that remains to close their orifices, that the hæmorrhage can be arrested.*

If the patient is exhausted by the fatigue of a long labour, or by a great loss of blood, she asks how the early extraction of the placenta will revive her strength,—will repair the hæmorrhage,—or restore to the uterus the action, which is defi-

---

* We cannot understand how the placenta can afford any support to the vessels of the uterus, or in any respect contribute to arrest the hæmorrhage, which is sometimes so violent as to flow out in an audible stream. As it therefore appears to do no good, there can be no sound reason for allowing it to remain in the cavity.

cient? We know very well that the hæmorrhage sometimes ceases by the extraction of the placenta, but she says the above mentioned Professor has remarked that the motion required for the removal of the placenta, and not the mere absence of the mass, has stopped the flow of blood.

This reasoning bears a specious appearance, but there would be no inconsiderable difficulty in establishing the point ; we, however, feel perfectly convinced of the propriety of the principle, that " the most important indication to be fulfilled is to excite the contraction of the uterus ; and that immediate and direct excitants are the best for this purpose."

It is necessary, we are told, to commence by disengaging from the orifice of the uterus the coagula which favour the accumulation of blood within : afterwards to fix the fundus of the organ by the application of one hand to the exterior, while, with the other, slight extension is made on the umbilical chord to produce the contraction of the uterus; but if this means does not prove immediately successful, we are to do at last what should, in our opinion, be in all cases done almost at the beginning of serious hæmorrhage, viz. to introduce the whole hand into the cavity of the uterus, for the purpose of exciting it to a vigorous contraction, and to the expulsion of the secundines. The author, however, very properly puts us on our guard against the too prolonged application of cold effusion or ice, in cases of violent hæmorrhage, followed by convulsions. When the flow of blood has ceased, she also advises the careful exhibition of cordials, among the best of which we should certainly concur with Burns, in placing opium.

In the concluding chapter on hæmorrhage, after the expulsion of the placenta, Mme. Boivin observes, with propriety, that this accident is often the result of the motions required for changing the linen of patients, and other causes, producing an activity in the circulating system. In fact, it seems occasionally to be produced by a peculiar febrile action almost independently of the state of the uterus. The latter part of the work, containing the account and treatment of hæmorrhage after delivery, with the exception of a few faults to which all works are more or less liable, merits perusal on account of the concise yet complete manner in which the subject is treated, and more particularly for the propriety with which the author has considered the various parts according to their relative importance. This, we must observe, is a point in which the French writers and lecturers on Midwifery do not always excel; for while they frequently dwell with minuteness on the tedious descriptions of presentations and cases, and by way of conclu-

sion inform us that such occurrences never took place, and are quite impossible, they sometimes pass over, in the most cursory and superficial manner, subjects which in practice are of the highest importance.

Art. IV. *Mémoire sur l'Influence du Systéme Nerveux sur la Chaleur Animale, présenté à l'Academie des Sciences dans sa séance du 15 Mai, 1820; par Charles Chossat, M.D. Membre de la Société des Naturalistes de Genève, &c.* Paris. 1820.

Of all the phenomena connected with the existence of animated beings, there is none more singular and difficult of explanation than the property they possess of generating a degree of heat always uniform, and often considerably superior to the temperature of the medium in which they exist. The theories which have been proposed for explaining this phenomenon may be reduced to two : the one, promulgated by Crawford, (who considered it as a purely chemical change,) and chiefly founded on the different capacities for caloric of venous and arterial blood, and of atmospheric air and carbonic acid gas. It is only necessary to state here, that the correctness of his observations on these subjects has been rendered doubtful by the experiments of later inquirers on the same points. The other theory, of which Mr. Brodie may be considered the author and principal supporter, supposes that the animal temperature, if not immediately produced by, is under the influence of the nervous system, and particularly of the brain. The fact which first shewed the probability of this influence was, that after decapitation, the performance of artificial respiration was insufficient to sustain the temperature of the animal subjected to experiment, and that the diminution of temperature was even more rapid when artificial respiration was performed than when the animal was left undisturbed.

M. Chossat, in the Memoir before us, seems, however, to have proved that some other parts of the nervous system, and particularly the branches of the sympathetic nerve in the abdomen, are intimately concerned in the performance of this function. Convinced that no theories nor opinions, however probable, can take away from the value of well ascertained facts, M. Chossat resumed the subject, which Mr. Brodie had investigated, with the precaution of examining all the particulars of

his experiments. The result of this examination has been the acquisition of some important knowledge on the theory of animal heat, and on the functions of the sympathetic nerves, hitherto almost unknown.

Before we pass to the new facts contained in the Memoir, it will be absolutely necessary, in order to estimate the value of these facts correctly, to advert to some preliminary circumstances mentioned by the author. These are the production of death from cold, the progress of cooling after death, and the influence of the position of animals under experiment on their temperature.

The principal phenomena attending death from cold are :—
1. A more or less rapid diminution of animal heat to a degree incompatible with life. This degree is very variable. M. Chossat has seen death occur in the cold bath at.26° centigrade (79° Fahr.), and even a little above this point, whilst in other experiments death has not occurred until 17° cent. (63° Fahr.) In general, putting out of the question differences of nervous energy in different individuals, it appears that the animal temperature is more elevated at the moment of death, in proportion as the cold has been more rapidly applied.

2. After death, the blood in the aorta and lungs is commonly found to be arterial ; sometimes, however, it is venous. This variation will not appear surprising, if we recollect that in adult subjects a nearly equal degree of force is requisite for the performance of the last inspirations, and the last attempts at circulation ; so that one of these functions may cease before the other, though the kind of death remains the same. Asphyxia, therefore, when it occurs is but an accidental circumstance, death would not be prevented by artificial respiration.

3. The heart sometimes performs some slight contractions, which suffice to change the arterial colour of the blood in the aorta, and pulmonary veins, and to produce the appearance of asphyxia.

4. The great cerebral veins ordinarily contain but little blood : the capillaries of the brain are sometimes slightly injected, and its cavities contain a little fluid.

5. Cold destroys by the exhaustion of the nervous powers, as is indicated by the progressive increase of stupor, and the imperfect performance of the principal functions of the animal œconomy. The stupor, although it has been compared to coma, differs from it in many essential characters. The respiration is sometimes observed to be stertorous, but this is rather an accidental occurrence than a fundamental character of the state.

Progress of cooling after death.—M. Chossat considered it necessary to gain some data on this subject, in order that he might, by that means, have a point of comparison in estimating the influence of any injury on the cause of the production of animal heat. With this object he made some experiments on the cooling of dead bodies, though, as he himself allows, his method is liable to some objections on the score of precision, for it must be admitted that the existence of circulation in a living body, when deprived of the power of generating heat, must alone suffice to produce a marked difference in the state of things. The dead body, in fact, in the process of cooling, is regulated merely by the laws of caloric; but in the living one, the circulating fluids, constantly impelled from the centre to the surface, may with propriety be compared to the currents which Rumford pointed out as existing in fluids, and favouring the process of cooling. In such experiments, it is necessary to pay particular attention to the circumstance of the thermometer being always placed at the same depth, for as the body is cooler near the surface than elsewhere, the neglect of this precaution might be the cause of great errors.

By investigating the subject, M. Chossat concludes that there is a great difference in the degree of rapidity with which the body loses its temperature, during the first and the last hours of the experiment. This circumstance will be more easily understood by giving the author's description of one of the experiments proving the fact.

A dog was killed by the section of the spinal marrow, between the second and third dorsal vertebræ. At the period of the animal's death, its temperature was 40.5° (cent.), and at the end of the eleventh hour, when the experiment terminated, 23.9° cent. making a total diminution of temperature of 16°.6. If this total diminution be divided into two parts nearly equal, viz. 8.8° and 7.8°, we shall find that,

To reduce the tem- $\left\{ \begin{array}{l} 40.5 \text{ to } 31.7 = 8.8 \\ 31.7 \text{ to } 23.9 = 7.8 \end{array} \right.$ $\left\{ \begin{array}{l} 3 \text{ hours } 30 \\ 7 \text{ hours } 0 \end{array} \right.$ were required.

If the number of degrees be divided by the number of hours, required to effect the reduction of temperature, we obtain what M. Chossat calls the medium diminution of temperature, that is to say, the average quantity of the reduction of heat in an hour, within any given limits. The limits which he has chosen are between 40° and 32° on the one hand, and 32° and 24° (cent.) on the other. Thus, in the experiment before us,

The reduction $\left\{\begin{array}{l}\text{between 40 and 32 is } \dfrac{\overset{o}{8}.\overset{o}{8}}{3h.5}=2.51 \text{ per hour.} \\[2mm] \text{between 32 and 24 is } \dfrac{7.8}{7h.}=1.11 \text{ per hour.}\end{array}\right.$

Position of the animal.—In all the operations the animals were placed on the back, the legs being secured behind. As it was to be expected that the inconvenience of this position might cause some variation in the temperature produced, and as Le Gallois had asserted, from experiments made on rabbits, that if an animal be extended on its back for a period of time sufficiently long, death will ensue from cold, M. Chossat thought it right to repeat this experiment, and continued it for one hundred hours. He concludes, 1. That animal heat in adult and healthy dogs is not diminished more than 2.° or at most $2\frac{1}{2}°$, by the position on the back for whatever length of time it may be continued. 2. That the temperature attains its minimum in the second or third hour, and then insensibly regains its original state. Lastly, that circulation and respiration do not experience any sensible variation in the course of the process.

Having noticed these preparatory observations of the author, we proceed to the consideration of the particular object of the work.

On the effects of injuries of the Encephalon.—As we have before observed, Mr. Brodie was induced to conclude from his experiments on decapitation, that the production of animal heat was under the immediate influence of the brain. To these experiments two objections might be made: 1st. That decapitation rendered the performance of artificial respiration necessary, and that this, according to Le Gallois, sufficed to diminish the temperature of the animal so far as to produce its death by cold ; and 2d, That, according to the same physiologist, the division of the eighth pair, and consequently the decapitation, produced an effusion of blood or serum into the parenchymatous structure of the lungs, and thus impeded the performance of the chemical functions of that organ. The above circumstances were supposed to explain the results obtained by Mr. Brodie, and M. Chossat thinks that it is from the same cause that his experiments have so little excited the attention of French physiologists.

In order to obviate the two objections, he endeavoured to discover what would be the effect of an injury of the brain, of such a nature that respiration should not be interrupted, and, consequently, that the lungs should remain under the influence

of the eighth pair. He effected his object by means of a complete vertical section of the brain in front of the pons varolii, through the opening made by the crown of a trepan.

In an experiment of such a nature, the total diminution of temperature was 16°. The reduction of temperature

$$\text{From} \begin{cases} 40.° \text{ to } 31.°7 = 8.°3 \text{ required } 2.50 - 2.93 \\ 31.7 \text{ to } 24. = 7.7 \text{ required } 9.0 \ - 0.85 \end{cases} \begin{array}{l} h. \\ \text{mean} \quad \text{diminu-} \\ \text{tion in an hour.} \end{array}$$

If the present results be compared with those of the former experiment, viz. 2°.51 and 1°.11, we shall find that the cooling took place more rapidly in the first part of the second experiment than in the corresponding period of the first, this being precisely the time in which the circulation was most vigorous. The circumstance is of importance, in as much as it proves that the continuance of circulation tends rather to accelerate than retard the progress of the cooling process. It consequently destroys one of the objections raised to the experiments on decapitation, namely, that the cooling depended on the weakness of the circulation.

Having thus established the fact of the influence of this kind of injury to the brain, on the production of animal heat, M. Chossat proceeded to enquire whether, as was probable from analogy, the same influence would be the result of other affections of that organ? He therefore had recourse to concussion, and the narcotic effects produced by opium for the experiment. In an experiment of the first (concussion), the total reduction of temperature was 17°.4, the animal dying of cold at the end of eleven hours. The mean diminution of temperature per hour, in the first period of the experiment (between 40°. and 32°.), was 2°.17., and in the second (between 32°. and 24°.) 1°. 30. In this experiment artificial respiration was performed, and M. Chossat mentions a circumstance confirming, on adult animals, the observation of Le Gallois on young ones, relative to the influence of cold retarding the occurrence of asphyxia, namely, that in the course of the latter part of the experiment before us, when the animal's temperature was reduced from 40°. to 23°. cent., the artificial respiration was once suspended for the space of thirty minutes, at the end of which time the asphyxia was incomplete, and the animal still lived. The examination of this experiment shews that concussion kills by the asphyxia consequent on the cessation of the functions of the brain, and that when this state is obviated by the performance of artificial respiration, life may be continued for a considerable period, and ultimately ceases from the effects of cold.

The last example of the influence of the brain on the tempe-rature of animals which M. Chossat gives, is derived from the effects of opium on that organ. In this case an aqueous solu-tion of opium was injected into the jugular vein of a dog, whose temperature was 40° cent. (104° Fahr.); at the end of twenty-two hours, when death took place, it had fallen to 22°.8. In this instance the mean diminution of temperature during the first period of the experiment was 2°25., and during the second 0°53. From the low temperature (72°. Fahr.) at which death took place, there can be no doubt that the animal perished from the degree of cold induced by the action of opium. This is a point of considerable importance, in a practical point of view, and seems to indicate, as M. Chossat notices, the propriety of the use of the warm bath in cases of poisoning from opium.

If we consider, collectively, the results of the experiments, performed by the section of the brain, concussion, and the effects of opium, we cannot fail to be struck with surprise at the very trifling degrees of difference, which exist between them. With such facts before us it is impossible to do otherwise than refer the phenomena to the operation of some single cause, altogether independent of the nature of the injury, and acting in the same manner in all these cases.

It being evident that the most important circumstance com-mon to all three of these injuries was the more or less complete interruption of the functions of the brain, it was natural to in-quire whether the immediate cause of the production of animal heat were not to be met with in the organs under the particular influence of the brain ? Considering the subject, then, in this point of view, two objects presented themselves :—the one to inquire whether the diminution of temperature might not depend on the interruption of the influence of the eighth pair on the lungs ; and the other, whether this effect might not be connected with the paralysis of the spinal marrow.

To resolve these questions, M. Chossat proceeded to make some farther experiments, commencing with the division of the eighth pair. The result of the experiment in his hands appears to have corrected an error into which Le Gallois had fallen on the subject. It will be recollected that the above writer was the first who satisfactorily explained the manner in which death is produced by the section of the eighth pair of nerves, namely, by the more or less perfect occlusion of the glottis which suc-ceeds the operation. When the effects of this occlusion are obviated by means of a tube introduced, or an incision made into the trachea, death still occurs, and was in a similar case attri-buted by Le Gallois to a state of asphyxia consequent on the

effusion of blood or serum into the parenchyma of the lungs. It is probable that the mistake arose from the circumstance, that M. Le Gallois' experiments were made on young animals, principally rabbits and guinea-pigs, in which the effusion is met with. But M. Chossat states, that in operating on adult dogs he has met with no similar occurrence, and that experience has shewn him that the animals do not perish until the temperature is so far diminished, as of itself to explain their death. The effects which he has seen resulting from the division of the nerves are :—immediately after the section a very much accelerated action of the heart; slowness and more or less difficulty of respiration, notwithstanding the complete division of the trachea. At the end of some hours shivering :—when the temperature has fallen to 30°. (86° Fahr.) subcutaneous convulsions increasing with the diminution of temperature, but becoming weaker when death approaches : extreme exhaustion of the muscular power :—sensibility diminishes as the temperature falls; the eye becomes dull; and vesications may be raised on the muzzle by the application of heat, almost without exciting pain. The force and number of the contractions of the heart insensibly diminish. Respiration lessens in frequency and extent, and is accompanied some time before death with convulsions of the lower jaw and yawning. The temperature of the animal having fallen rapidly one or two degrees during or directly after the operation, at the end of some hours a state of re-action occurs, which brings the heat nearly to its original standard. The variations of temperature having continued about 36°. or 37°., for twelve, twenty-four, or even thirty-six hours, ultimately terminate by the diminution which precedes death. For the most part, life does not cease until the temperature has reached a very low point, in one experiment by M. Chossat, 17° cent. (62° Fahr.)

If we compare the results here detailed with those of the preliminary observations, we evidently recognize all the characters of death from cold. We might, therefore, feel inclined to believe, that it was in consequence of the connection formed by the eighth pair between the lungs and the brain, that serious injuries of the latter organ brought about the diminution of animal temperature. But the adoption of such a theory would have left one important circumstance unexplained; the difference in the extent of the mean diminution of temperature per hour, after injuries of the brain and the division of the eighth pair.

In three instances of sections of the eighth pair, the mean diminution of temperature per hour during the first part of the

experiments was respectively 0°.09—0°.25—and 0°.45, average 0°.26 In three instances of injury done directly to the brain, the average diminution of temperature per hour, in the first part of the experiments, was 2°.45, so that it appears that the temperature fell nearly ten times more rapidly in the latter than in the former cases. Whatever the cause of so great a difference might be, it was evident that the effect produced on the eighth pair could not explain the rapidity of the diminution of temperature caused by injuries of the brain; this conclusion is farther strengthened by the result of another experiment, the division of the brain in front of the pons varolii, in which the temperature rapidly fell, although respiration was performed with freedom.

The present difference in the mean diminution of temperature per hour does not occur in the second parts of the experiments, (i.e.) for all degrees of temperature between 32°. and 24°. cent. M. Chossat draws two conclusions from the facts which we have just enumerated.

1. That animal heat is still disengaged after the division of the eighth pair, though in smaller proportions, so long as the temperature of the body is above 32° cent., or thereabouts; but that below this point the body cools in the same manner as a dead one would.

2. That the mean diminution between the limits of 32°. and 24°. differing little from that produced by cerebral injuries, and the cooling of bodies after death, it follows that in each experiment the first period is only truly characteristic. It is for this reason that he adopted 32°. as a point of division in his experiments, for the purpose of determining the mean diminution.

Of the influence of the spinal marrow on animal heat.—As the interruption of the influence of the eighth pair of nerves on the lungs was insufficient to explain the rapid diminution of temperature consequent on injuries of the brain, it became an object to determine if the paralysis of the spinal marrow were not the true cause of this phenomenon.

The organization of the spinal marrow is known to be such, that at whatever point it be divided, those muscles are necessarily paralysed, of which the nerves are derived from the portions of the organ situated below the section. Although the same law does not apply in an equal extent to the other functions of the animal economy, these last are, however, always found to be more or less disturbed, if the section be performed at a sufficiently elevated part of the organ. M. Chossat mentions an accidental circumstance which must be attended to in performing the operation, namely, that it is sometimes accom-

panied by a sort of stupor of the nervous system, depending on the immediate action of the instrument on this great source of the corporeal functions. When the stupor reaches a certain pitch, it produces syncope, which destroys the animal in a greater or less space of time after the operation. From this circumstance, all the experiments are not equally proper for the purpose of displaying the effects dependent on the section. M. Chossat thinks that no conclusions can be drawn with respect to the last point unless the pulse and respiration are found to preserve a sufficient degree of force. These two functions must serve as criteria of the state of the nervous system.

Division of the cervical part of the spinal marrow.—There are but four places in which the anatomical disposition of the parts will readily allow of the section of the cervical part of the spinal marrow ; namely, immediately below the occipital bone, in the two first intervertebral spaces, and lastly between the seventh cervical and first dorsal vertebræ. In three experiments of this kind the mean diminution of temperature per hour was respectively 2°.53,—2°.32, and 2°.80. Thus it is seen, that we find in the whole extent of the cervical part of the spinal marrow, the same mean diminution as was presented by the injuries of the brain. Indeed, in the instances where the section was made below the occipital bone, or in the first intervertebral spaces, the diminution of temperature might have been attributed to the cessation of the functions of the brain, in consequence of the division of the spinal marrow at so high a point. But such an explanation would not extend to the section performed between the last cervical and first dorsal vertebræ, for here the functions of the brain were only affected in proportion to the diminution of the animal's temperature. We can then, says M. Chossat, no longer consider with Mr. Brodie, animal heat, as being under the sole and immediate dependance of the brain ; and it is natural to conclude, that decapitation acts so powerfully, only in consequence of the influence exerted by the brain over the integrity of the functions of the spinal marrow.

Section of the dorsal part of the spinal marrow.—The preceding experiments naturally excited M. Chossat to continue the division of the spinal marrow in the remaining parts of its extent. We shall proceed to give an account of his observations on this point, and his deductions from them. In the three first intervertebral spaces of the back, the mean diminution of temperature per hour, was respectively 2°.42, 1°.92 and 1°.85 cent. If we compare these different sections of the dorsal part of the spinal marrow with the results of the section of this organ between the last cervical and first dorsal vertebræ, we shall see, that

from the last point, the temperature diminishes more slowly, in proportion as the section is performed at a lower part of the spine; so that even before the last dorsal vertebra, the extent of the diminution of temperature during the first hours is scarcely sensible. The present remarkable result, says M. Chossat, which is the natural deduction from the experiments before us (namely, the division of the spinal chord in all the intervertebral spaces of the back), would be rendered more evident, were it possible to present a table of the successive degrees of the mean diminution of temperature. But the determination of the point appears no longer possible, not because the animal fails to cool, and to reach the point of 32° (cent.), but because, when it has attained this limit, it is no longer under the immediate influence of the operation.

To explain this, it must be mentioned, that from the fourth intervertebral space of the back, the diminution of temperature, instead of taking place in a continuous manner, as in the preceding experiments, is divided into two distinct periods, by the occurrence of a temporary re-action of greater or less duraration. This re-action, which varies in proportion to the situatuation of the injury and the strength of the subject, is rendered evident by the occurrence of shivering, the hardness and quickness of the pulse, and the re-ascention of the temperature. M. Chossat has never observed it after injuries of the brain, or of any part of the spinal chord above the three first dorsal vertebræ. It appears an analogy to that observed after the division of the eighth pair.

There is here another circumstance which deserves attention, namely, that in general, for M. Chossat does not take upon him to affirm the constant occurrence of the fact, the re-action took place at a degree of temperature, more elevated in proportion as the point at which the spinal chord was divided, was situated lower, and the power of producing heat thus less affected. This point will be made more evident by the following table, shewing the degree of heat, at which re-action took place :—

4th intervertebral space ..	34.7	8th intervertebral space ..	39.0
5th ...... ditto	35.6	10th ..... ditto	39.3
6th ..... ditto	35.7	12th ..... ditto	40.5
7th ...... ditto	38.3		Cent.

As the re-action continues until the nervous powers are exhausted, the diminution of temperature which succeeds it, and ultimately induces death, cannot be considered as an immediate consequence of the operation. For this reason it cannot be taken into consideration in the determination of the mean dimi-

nution ; for the result would be complicated by the intensity of the nervous powers of the individual, and would probably depend more on the last circumstance than on the operation itself. The only thing which it points out is, that the lower the point of the section, the farther we remove from the powers of producing animal heat. As it was impossible to use the mean diminution of temperature for the purpose of comparison, M. Chossat adopted another method, that of forming a table of the greatest diminution observed in the three hours succeeding the operation, without noticing the re-action which occurred after this period, and which, in some cases, had even before the end of the third hour raised the temperature more or less above its greatest diminution. This manner of arranging the facts had the advantage of presenting nothing but what actually belonged to the operation.

Experiments.	Greatest fall of Temperature.	Caculated Series.	Difference
	°	°	°
Section of the Encephalon........................	......8.3......	———	———
Ditto, of the spinal chord below the 7th cervical vertebra	......8.2......	...8.2...	———
Ditto, in the 1st intervertebral space of the back	......7.6......	...7.4...	... 0.2
Ditto, in the 2d intervertebral space.........	......6.5......	...6.6...	... 0.1
Ditto, in the 3d intervertebral space.........	......5.6......	...5.8...	... 0.2
Ditto, in the 4th intervertebral space........	......4.9......	...5.0...	... 0.1
Ditto, in the 5th intervertebral space.........	......4.2......	...4.2...	———
Ditto, in the 6th intervertebral space.........	......3.0......	...3.4...	... 0.4
Ditto, in the 7th intervertebral space.........	......2.5......	...2.6...	... 0.1
Ditto, in the 8th intervertebral space.........	......1.9......	...1.8..	... 0.1
Ditto, in the 9th intervertebral space.........	......0.5......	———	
Ditto, in the 10th intervertebral space........	......1.2......		$\frac{1.2}{9}$ = to
Ditto, in the 11th intervertebral space........	......0.0......		
Ditto, in the 12th intervertebral space........	......0.6......		0.13 mean error.

In order to render the table intelligible, it is necessary to observe, that the third column is an hypothetical calculation, derived from the consideration of the second (that of the greatest diminution of temperature), and added by M. Chossat for the purpose of shewing how nearly the facts coincide with the supposition, that the division of the spinal chord at each of the points enumerated, as far as the ninth dorsal vertebra, was attended by a diminution of temperature equal 0°.8 (Cent.) greater than that consequent on the division at the point above.

Having premised thus much, we shall next mention the important conclusions which these facts indicate :—1. That the temperature falls more slowly, in proportion as the division is made at a lower point of the spine. 2. That the series of the

greatest fall of temperature contained in this table may be divided into two classes. In the first, which comprehends all the intervertebral spaces included between the seventh cervical and ninth dorsal vertebræ, the diminution during the first three hours, has, generally speaking, been 2°. and upwards. If the series of numbers composing the first column be attentively examined, it will be seen that the difference between any two of them varies little from 0°.8, as we have already mentioned.

In the second part of the table, where the diminution is less than 2°., the series of numbers decrease in a very irregular manner. The reason of this is easily understood; it will be recollected that the position on the back is capable of lowering the heat 2°.5 in the first three hours of the experiment. If, therefore, the influence of the section of the spinal chord in the four last intervertebral spaces of the back, is not even equal to that of the position in question, it is not at all surprising that individual varieties in the rapidity of the re-action, should altogether conceal the true cause of the phenomena.

3. A third conclusion may be drawn from these experiments. If the temperature had been found to diminish nearly uniformly after all divisions of the spinal marrow, it might have been thought that the injury produced such disorder in the nervous powers, that they were insufficient for the support of life. But, as we see that lesions of the lower part of the spinal marrow present no other phenomena than those resulting from the division of a nerve of equal size, we have a right to conclude that lesions of the spinal marrow, in general, act only by the state of paralysis of all the nerves which arise below the point of section.

If, then, the operations performed on the spinal marrow do not act by the general disorder of the nervous functions, but simply by causing paralysis of the nerves arising below them, what are the nerves which derive their origin from the dorsal part of the spinal marrow? There are evidently none but the intercostals and the great sympathetic. Hence, as no one would be inclined to attribute the faculty of generating heat to the walls of the thorax, the great sympathetic nerve can alone explain the phenomena. But, however probable such a conclusion might appear, in a subject of so much importance, the explanation must be considered as conjectural, unless supported by direct evidence in its favour.

It became necessary, therefore, to operate on the great sympathetic nerve ; but its situation in the chest rendered it almost inaccessible, without causing extreme injury ; and its numerous anastomoses with the spinal marrow, establishing an arch of

communication between the divided extremities of the nerve, in the first periods of the operation, might render its effects imperceptible. For this reason, M. Chossat thought it preferable to operate on the semilunar ganglia, or rather on the plexus, which, in dogs, supplies their place. The following is the mode in which he performed the operation :—An incision being made on the left side of the abdominal parietes, immediately below the thirteenth rib, the fore-finger was passed deep in front of the aorta and kidney; the renal capsule was then sought for, easily recognised, drawn outwards and extirpated. The consequence was, that the great sympathetic nerve, situated at its entrance into the abdomen immediately behind the renal capsule, to which it adheres pretty firmly, was almost inevitably divided at the point where it joins the semi-lunar plexus. The plexus was injured by the degree of force necessarily employed, and its functions interrupted. It must, at the same time, be remembered, that this process acts on the left side only, and that, therefore, we cannot expect that the interruption to the generation of heat should be so far complete as to produce the mean diminution of the first experiments.

In two experiments of a similar kind, the diminution of temperature in the first period of each was respectively, 7°.6, and 6°.2, and the mean diminution per hour, in the same periods, 1°.9 and 1°.58.

The result of these experiments, says M. Chossat, was certainly very satisfactory, as it shewed the recovery in the abdomen of the greater part of the heat, which had gradually disappeared in proportion as the section of the spinal chord was performed at a lower point; and the whole, if the heat was not sensible, it is evident that this circumstance depended on the imperfection of the process employed, which did not destroy the action of all the branches of the sympathetic nerve.

Desiring to obtain more perfect results, M. Chossat considered that if he could not wholly destroy the action of the sympathetic nerves, by operating directly on them, he could, at least, destroy the efficacy of this action by depriving them of the materials on which they operate; in short, he concluded from his experiments, that, by tying the thoracic aorta, the animal must necessarily perish of cold, and that the progress of the diminution of temperature must be the same in the abdomen and the thorax, if the first of these cavities were alone concerned in the production of heat.

In one experiment, the aorta was tied a little above the point where it passes through the diaphragm, the temperature of the oesophagus and the rectum being 40°.6. The mean diminu-

tion per hour was, in both these places, 2°.4, and during the course of the experiment the temperature of the rectum was on an average, 0°.73 higher than that of the oesophagus. In another experiment, precisely similar, the mean diminution of temperature, per hour, was, in the rectum, 2°.74, and in the oesophagus, 2°.67. During the whole period of the operation, the temperature of the rectum was on an average 0°.83 higher than that of the oesophagus.

As will be seen, these two last experiments present the same mean diminution as that attending injuries of the brain. They appear the more conclusive, because, when compared with the facts already established, we find the same results attending on experiments, which, though effected in a different manner, have really the same mode of action. Indeed, the common result of both is the death of the abdominal cavity : only that whilst the one kind produces death, thereby suspending all nervous influence, the other attains the same object by putting a stop to circulation. These different experiments vary less from one another than at first sight appears, which, says M. Chossat, would be still more apparent, were I to mention the symptoms common to most of them, as the paralysis of the posterior extremities, the tetonic tension of the anterior ones, &c.

It is remarkable, that, in the last experiments, the oesophagus should be found 0°.7 or 0.8 colder than the abdomen, notwithstanding this latter part was completely deprived of life, insomuch that incisions made into the posterior extremities neither caused pain, nor were followed by a drop of blood. The conclusion must be, that the thorax contributes in no perceptible degree to the disengagement of animal heat; for the diminution of temperature in the abdomen would, by comparison, have rendered the smallest quantity sensible. But here an objection occurs. If the lungs have no share in the generation of heat, how happens it that the division of the eighth pair causes the death of the animal from cold ? M. Chossat is of opinion, that his experiments do not prove that the lungs give off no heat, but only that this organ can barely supply the great quantities of heat it loses every moment. He considers the organization of the pulmonary plexus, and the secretion furnished by the lungs, as proofs of this opinion. Besides, says he, we have seen that the paralysis of a certain number of the filaments which join the abdominal plexuses by means of the section of the spinal marrow, was sufficient to weaken the action of these organs; and that the weakness resulting from this cause was proportioned to the number of filaments paralysed, so that the diminution of temperature was continuous or suspended by a

period of re-action, according as the number of filaments was greater or less. Applying these data to the section of the eighth pair, it will be seen that the diminution attendant on this experiment, was but the necessary consequence of the numerous anastomoses, through the medium of which these nerves communicate with the abdominal plexuses and the first thoracic ganglion. A fact which M. Chossat has frequently had occasion to observe, appears to him to confirm the reciprocal influence between the great sympathetic and the eighth pair; namely, that animals almost wholly lose their voice when the spinal marrow is divided in one of the upper intervertebral spaces of the back. This fact is easily understood by the consideration of the anastomoses between the sympathetic and the nervus vagus.

Another objection which might be made to these experiments, is to attribute the diminution of heat to the debility caused by severe injuries to the nervous system. The debility, in question, could only act on the temperature in one of two ways, mediately or immediately.

But if the objection be made of a mediate action on the nervous system, in consequence of an interruption to the respiratory and circulatory functions, M. Chossat answers it by referring to his experiments, in which respiration was constantly observed to be regular, and circulation, during the first hours, more accelerated than in a natural state. This, however, was the period of the most rapid diminution of temperature.

If, on the other hand, an immediate action of the nervous system is admitted, independent of the state of circulation and respiration, the supposed objection raised is no longer so, for this would be to object precisely the fact that was intended to be proved, namely, that circulation retains its activity, and the blood its perfect exposure to the air to no purpose, if the nervous system be seriously injured; that under these circumstances animal temperature rapidly falls, whilst, at the same time, secretion and most of the chemical functions of the animal œconomy are found to diminish.

M. Chossat states, that he has had many opportunities of establishing the correctness of the remark made by Mr. Brodie, as to the influence of decapitation on the secretions. The general result of the observations he has made on this point is, that all injuries of the nervous system which affect the disengagement of animal heat, seem to have a similar operation on the secretions; that an intimate relation exists between these phenomena, and that, although it is not improbable this may be of the nature of cause and effect, he does not take upon him

to affirm it, as he is unable to adduce any positive facts in favour of the idea.

In connection with this subject, it may be remarked, that the great sympathetic nerve, the influence of which on animal heat has been seen, is distributed less to the circulating system than to the vessels proceeding to secreting organs. Wherever a secretion of any importance occurs, we find ganglia or branches of the great sympathetic. It would be difficult to bring forward a more striking instance of this connection than is presented to us in the orbit, by the proximity of the opthalmic ganglion to the lachrymal gland, and the different secretions of the eye.

Here we must conclude our account of this memoir, which is not less interesting from the importance of the subject, and the imperfection of our knowledge relating to it, than from the singular ability and modesty with which M. Chossat has added so many new facts to this obscure part of experimental physiology. The wish to make our readers fully acquainted with the contents of the work, has so far extended the length of our analysis, as to prevent us from entering into a particular investigation of the individual facts it contains.

——————————

Art. V. *Einrichtung der Medicinischen Klinik im Akademischen Hospitale zu Heidelberg, nebst einigen Bemerkungen über die darin Behandelten Krankheiten. Von Dr. J. W. H. Conradi, Grossherzoglich-Badischem Geheimen Hofrathe, Professor der Medicin zu Heidelberg, &c. &c.* Heidelberg, 1820.

Regulation of the Medical Clinics of the Academical Hospital at Heidelberg, with Remarks on the Diseases treated there. By Dr. J. W. H. Conradi, Professor of Medicine at Heidelberg, &c. &c.

THE work before us consists of three divisions: The first is an accurate account of the Hospital, more particularly of the alterations and improvements made in it since the year 1818. The principles regulating the clinical practice, and the rules for students, form the second divisions: the former of these are extracted from the author's Introductory Lectures on Medicine. In the third division, are some remarks on the diseases treated in the Hospital during the year 1819.

The part of the Hospital destined for the reception of me-

dical cases, contains twenty-eight beds, and occupies the second
story of the building. The third story contains the surgical
patients. The internal arrangements of the institution leave
nothing wanting to render it as commodious and complete as
possible. In the account of the economical regulation of the
Hospital there is nothing particularly worthy of notice, except
that relating to the diet of patients. A complete and very ex-
tensive Table of Diet has been drawn up, (consisting of four
divisions, with their subdivisions,) a copy of which is hung up in
every ward, and the diet of each patient compared with it as it
is brought into the ward. This most important part of the
economy of an hospital, is perhaps, not sufficiently attended to in
this country. The greatest care is taken that the medicine pre-
scribed be given with the minutest accuracy, but the kind and
quantity of food taken by the patient are considerations often
not thought worthy of notice. By adopting a plan similar to
that in use at Heidelberg, not only would the quantity of food
be well regulated, but the particular kind proper for each patient
might with ease be selected and adhered to.

  The second part of the work, which is an abstract of the
author's Introductory Lectures on Medicine, consists of six
sections : On the Principles to be observed in the Examination
of Patients—Forming a Prognosis—Fixing a Plan of Treatment—
Opening of Bodies—and Drawing up the History of a Disease.
These subjects are treated with great clearness, and are illus-
trated by references to numerous authors, but are too elemen-
tary to require any notice here. The last section contains the
Rules to be observed by the Pupils ; of these we think it may
not be uninteresting to give an abstract :—

  Those desirous of becoming patients, are required to signify
the same to the director, and to bind themselves, by the signature
of their name, to observe the rules and ordinances of the
institution.

  Every pupil (unless prevented by sickness or some other suf-
ficient cause) must be present daily, at the hour appointed for
clinical instruction. If the cases be urgent, twice a day; or
more, according to circumstances. If called upon, he must be
ready to visit his patient in the night; and in every case, if
there be any change in the symptoms requiring an alteration in
the treatment, must give notice of it without delay to the
director. Unnecessary visits, out of the accustomed hours, are
forbidden, as prejudicial to the patients' rest, and destructive of
good order. If prevented from visiting his patients by sickness,
he must give notice of it to the director, who transfers his pa-
tients to another.

If any pupil be negligent in the care of his patients, or in writing the history of the cases, they are taken away and no more entrusted to his care.

The cases are divided among the pupils in regular succession, unless the director see sufficient cause to make exceptions. No pupil can exchange a case which he has undertaken without express license from the director.

The pupil has to question and examine the patients that fall to his share, under the director; and in the presence of the director, to form the diagnosis and prognosis, to point out the indication, and to propose the necessary treatment, during which he is not to be interrupted by another. After he has finished his examination, the others are at liberty, if they think any thing deficient or not clearly established, to give their opinion freely. Whatever might make a prejudicial impression on the patient, is spoken in Latin, and any discussions which would produce delay at the bedside, are deferred till afterwards, and settled in the room set apart for clinical instruction. He has then to write the prescription, to read it in the instruction room, and then to lay it before the director for his signature. No pupil can by any means prescribe for a patient, without previously consulting the director, some urgent cases excepted, in which there would not be time to speak to the director or his assistant.

He must then place the name of the patient, his disease, and also his own name over the bed. He must keep a copious journal of the history and state of his cases, and bring it with him daily at the hour of visitation, or transmit it if he be prevented from appearing: he must give reports from it, and within three days after the patient's cure, deliver it to the director.

If a patient die under his care, he must either make the examination of the body himself, in the presence of the director or his assistant, or he must give the necessary information respecting the case from his journal; and, lastly, enter the result of the examination in it.

The third part of the work is employed in giving an account, not of every the most common case that occurred, as is often done in reports of this kind,) but of some interesting and instructive cases.—The author's remarks are added. We select the following observations and case.

Among the various ways in which hæmorrhage in vicarious menstruation takes place, the most common are for the blood to be discharged from the nose, from hæmorrhoidal tumours, from the lungs or stomach. In more rare instances, the hæmorrhage is from the eyes, in the form of bloody tears,

the eyelids, the ears, the mouth and throat, the tongue, the gums : from the salivary glands, the breasts, the umbilicus : from the intestines, the urethra, the nymphæ : from the skin, in the form of a bloody perspiration, either from a particular spot, or from the surface in general : from the stump of an amputated limb, from wounds or ulcers, or from veins spontaneously opened.* In still more rare instances, the blood is discharged from many parts at once, or in succession.† Sometimes the hæmorrhage observes the period of the menstrual discharge, and at others appears irregularly ; but it is more copious at that period than before.

Out of many common cases of this form of disease, which came under his observation at the hospital, the author has selected the following interesting one :—A young woman, twenty-two years old, of middle size, and otherwise a strong constitution, was admitted in September, 1819. She had had a nervous fever in December, 1818, and complained that for a long time the menstrual discharge had not appeared, but that at the time of their appearance, blood had been discharged from the rectum, and often from the breasts. The symptoms observed at this time were great anxiety, pain in the head and limbs, constipation, strong and full pulse, accession of fever in the evening, restlessness, bleeding sometimes from the nose, sometimes from the lungs (accompanied by great pain in the chest); the blood was bright red and frothy ; a discharge of blood from the ears followed. The patient ascribed her disease to a cold, which, particularly at the menstrual period, is known to be among the most common causes of this complaint.

As the hæmoptysis was accompanied by great pain in the chest, venæsection from the foot was directed, together with foot-baths, internal antiphlogistics, and mild laxatives. (Antim. Tart. c̄ Sodæ Sulph. ex Dec. Graminis.) A slender diet was also directed. As these means produced no alleviation of the symptoms, and after two days the bleeding from the ears and nose, and the hæmoptysis returned, the venæsection was repeated, the other treatment being continued. In two days more there was no change for the better ; great congestion appeared about the head, the face was red and swollen, the bleeding from the ears, and the hæmoptysis continued more copious than from

---

* For cases of these kinds, see Schurig's Parthenologia, p. 83. ; Van Swieten, Comm. in Boerh. Aph. T. iv. p. 421 ; Haller. Element. Physiol. T. vii. P. ii. p. 157 ; and Ploucquet. Literat. Med. Digesta.

† Haller. El. Phys. T. vii. p. 159-60 ; and Ploucquet.

the nose. The venæsection was again repeated, and the other means employed more vigorously. In five days the patient felt somewhat better, the congestion about the head was less, and the bleeding not so frequent, and in this state she remained for about a month, during which time mild antiphlogistics and laxatives, with foot-baths, were continued. At this time symptoms and traces of menstruation were observed, and by the use of foot-baths and fomentations, the discharge was established, but it quickly disappeared again, though blood was abstracted from the foot, and leeches applied to the neighbourhood of the pudendum to promote it. The congestion and pain in the head now became more severe; the constipation returned; and hæmorrhage, first from one ear, then from the other, and lastly, from both, followed. This became more copious on the following day, and in a few more, a discharge of blood from both nipples appeared. Notwithstanding the venæsection was repeated, and the internal means continued, the bleeding from the ears and breasts returned more frequently, day and night; epistaxis also occurred, accompanied by great anxiety, pain in the chest, head-ach, &c.

As the treatment hitherto employed appeared ineffectual, and the venæsection, which was indicated for the relief of the hæmoptysis and congestion, had been necessarily often repeated, it was determined, on the 21st of October, to give Digitalis. Accordingly, a table spoonful of an infusion of half a drachm of Digitalis in six ounces of water, was given every two hours. Before the whole of this portion was used, nausea and vomiting, with lividness of the face, appeared, which rendered it necessary to give it less frequently: but, after the expiration of two days, the pulse, before strong and full, became weak and small, the congestion abated, and the bleeding entirely ceased. The vomiting now being severe, and the patient feeling very much exhausted, the Digitalis was, after five days, (on the 28th,) discontinued. In the night symptoms of menstruation were felt by the patient, and it was encouraged by foot-baths. In the next night they appeared again, but not copiously, and disappeared again on the following day. The congestion about the head still continuing, but without hæmorrhage, it was thought proper to give the Digitalis again in a different form. Ten drops of the tincture were given three times a-day: it produced in a few days nausea and vomiting, as well as exhaustion, but the pulse became slower, and the congestion disappeared. No hæmorrhage occurred after its use; and, on the 16th of November, the menstrual discharge returned in a proper manner and quantity. The patient now grew daily better, and was

soon strong enough to follow her accustomed occupations, and accordingly left the hospital at the end of the month. After six weeks the author saw her again : she was still well, and had menstruated properly.

Another case of fatal Aneurysm of the heart is related, and some observations made by the author on the proper mode of exhibiting Bark in intermittents, &c. but these are not sufficiently striking to require any notice from us.

ART. VI. *Nouveau Traité de la Rage, Observations Cliniques, Recherches d'Anatomie Pathologique, et Doctrine de cette Maladie.* Par L. F. Trolliet, *Professeur de Médecine clinique à l'Hotel-Dieu de Lyon, Professeur d'Anatomie à l'Ecole de Beaux-Arts, Membre de plusieurs Sociétés savantes.* A. Lyon. 1820.

THIS Work possesses strong traits of originality : it exhibits new views of the pathology of the disease upon which it treats, drawn from a more extensive experience, and from more numerous dissections of hydrophobic subjects, than have fallen under the observation of any other author who has written upon this very unpromising subject.

Coming, therefore, before us, with such distinguished qualifications, we shall submit it to an ample analysis ; in the expectation that the doctrines which it promulgates, may be subjected to fair examination in this country, and with the hope, that a rational pathology of the disease may be established, which will give rise to more scientific attempts at cure, than have hitherto been resorted to.

M. Trolliet prefaces his Researches with a few brief considerations respecting the history of Hydrophobia, from the days of Dioscorides, up to the present time. He afterwards gives an account of the ravages produced by a rabid wolf, in the department of the Isère, in 1817. This relation forms the first of six parts, into which he divides the work. The enraged animal having wounded twenty-three persons, besides some cattle and dogs, was at length arrested in his career of destruction by a young man, whose self-devotion, on the occasion, deserves to be related.

" On ne tarda pas à apprendre que la courageux dévouement du jeune David venoit de mettre une terme à ses ravages. Il

étoit dix heures du matin; ayant accompagné son père au Village de Chatellant, il vit cette *louve* venir à lui au travers d'un pré. Le jeune homme armé d'un trident, l'attend de pied ferme, brise son trident sur le dos de l'animal, enfonce la main droite dans sa gueule, au moment où il s'élance sur lui, le serre etroitement le renverse, lutte et le retient, jusqu'à ce que son père l'ait tuée entre ses bras.

" Avant d'expirer le terrible animal avoit introduit le fatal poison dans les veines de l'infortuné jeune homme."

The greater proportion of the persons injured received their wounds in the face; and many had to travel several leagues, before they could obtain medical assistance. Twelve of the individuals, out of the twenty-three who were bitten on the 22d of May, entered the Hotel-Dieu, at Lyons, that evening, and the following day; and every prophylactic, which the situation of the injured parts could admit of, was employed. The remaining eleven being more confident, or having sustained less injury, either remained in the country, or resorted to the remedy of Thurin. All the dogs, and some of the cattle that were bitten, were immediately killed; and every method was attempted to assure the minds of the wounded persons, of the absence of rabidity in the animal who had inflicted those injuries. A fortnight had elapsed when the first signs of hydrophobia appeared in two cows, who soon afterwards died of the disease; and nearly, at the same time, one of the persons who had been bitten in the face, exhibited symptoms of this dreadful malady.

Claude Mayen, thirty-six years of age, and of a robust constitution, was wounded in the face, and in the right hand. The symptoms of the disease appeared about a fortnight after the receipt of the injury. The parts had been cauterized as far as their situation could admit, and afterwards treated with the application of diluted solution of a chlorine; the same remedy was taken internally, according to the recommendation of Professor Brugnatelli. Upon the accession of the symptoms, two large bleedings were resorted to; and, in the first twenty-four hours, twenty-seven grains of opium, and nine grains of the extract of Belladonna, were exhibited without any effect. He died on the second day of the disease. The dissection took place the following morning. The cerebral pia mater appeared inflamed, and in some situations covered by an exudation, which varied from a nearly limpid serosity, to a gelatinous consistence. A very clear serum escaped, upon dividing the cellular lamina of the pia mater with the point of the scalpel. The substance of the brain was rather softer than usual; the ventricles contained

a little serum : the medulla oblongata and spinal cord were without alteration. The external surface of the arachnoid exhibited a slight rose tint. The eighth pair of nerves, with the cervical plexus, were examined with care, but presented nothing particular either in their pulp, or in their neurilema. The mouth and pharynx, and salivary glands, were perfectly healthy. The larynx exhibited, in several places, marks of inflammation, which extended to the trachea, and was augmented in intensity in its descent, and through the divisions of the bronchiæ; a frothy and sanguineous mucus lined the inferior portion of the trachea, and filled the bronchiæ. The lungs were of a soft consistence, of a brownish red colour on their surface and in their texture : both the right cavities of the heart, and also the left auricle, contained black blood. Upon opening the right ventricle, large globules of air, surrounded by vesicles of arterial blood, were quickly disengaged. The stomach and intestines were distended with air, though no part of the digestive apparatus presented any diseased appearance.

Richer, aged nineteen, of a strong constitution, was bitten at the same time, in the neck and arm. The actual cautery was employed immediately upon his admission in the Hôtel-Dieu, which was on the morning following that on which he received the injury. He afterwards went into the country, and took the Thurin remedy. The bitten parts had been digested with chlorine during eight days, this remedy having been administered internally at the same time. On the 15th of June symptoms of hydrophobia appeared. He was bled largely, and antispasmodics and mercurials were given in large doses. He died early in the morning of the 17th. The body was examined about the middle of the same day. The injured parts exhibited no appearance of recent irritation. The dura mater presented its usual colour; the arachnoid a very pale rose tint; the pia-mater was injected with blood throughout its whole distribution; the cerebral substance was rather soft, but without any alteration in colour, and, upon cutting into its mass, the divided surfaces presented a number of bloody points. The cerebellum and spinal cord exhibited no alteration from healthy structure. The mouth and pharynx were natural, and contained no saliva; the salivary glands were of a healthy size and colour. The larynx contained a little mucus; the trachea was slightly inflamed in its lower part, and towards the division of the bronchiæ. The lungs had their surface studded with bubbles of air, which, having elevated the serous membrane, presented a multitude of transparent vesicles ; these globules were most nume-

rous in the loose cellular tissue which envelopes the blood-vessels. The colour of the lungs, through their whole texture, was red, inclining to brown. The cavities of the heart, with the exception of the left ventricle, contained some very black blood. The veins of the chest and neck furnished a large quantity of a black and very liquid blood; the stomach and intestines were distended with air. No other diseased appearance could be traced in any of the viscera or textures.

Guyot, aged eighteen, was bitten on the 22d of May, by the same wolf. The injury on the face was so deep and extensive, as to render it nearly impossible to cauterize the parts with hopes of safety. This was, however, done the same evening, and dressings with the aqueous solution of chlorine were employed for some time. This substance was also exhibited internally. Symptoms of hydrophobia made their appearance on the 21st of June: the bitten parts, at that time, exhibited no sign of irritation. He was treated by Opium* with Carb. Potassæ in very large doses, without any effect. He expired on the third day of the disease. The inspection was made the same day. Upon opening the cranium the sinuses were gorged with blood; the dura-mater was healthy; the arachnoid was of a pale rose tint in the parts where it is separated from the pia-mater. This latter membrane had its blood-vessels extremely injected through its whole distribution, with extravasated portions of very fluid blood in the cells of its tissue, in that portion extending from the re-union of the optic nerves to the annular protuberance. The ventricles contained a very small quantity of serosity; the substance of the brain appeared a very little softer than ordinary; the cerebellum offered no alteration in structure; its pia mater was, however, very slightly injected, which gradually disappeared towards the commencement of the vertebral canal; the mouth, pharynx, and salivary apparatus were in many respects healthy; the mucous membrane covering the trachea was of a rose colour, deepening into a reddish brown near its bifurcation, and where it lines the bronchiæ, which contained a frothy matter throughout their ramifications; the surface of the lungs was covered with transparent vesicles, formed by the infiltration of the air through the cellular subserous tissue; both lungs were of a brownish red colour in their texture and upon their surface; the left ventricle of the heart was firm and empty, the right ventricle was softer, and with

* One drachm of Opium with three of Potass. Carbon. in twelve hours.

both the auricles, were filled with a liquid black blood. On opening the pectoral aorta a number of air bubbles escaped along with the blood; a cylindrical gelatinous coagulum, of about ten inches in length, filled this artery, and extended inside the right Subclavian, to a short distance; the stomach and intestines were distended with air, but of a healthy appearance; the serous membranes of the chest and abdomen were unchanged; the mucous membranes of the digestive tube were quite natural, unless in a very small portion of the jejunum, which contained two lumbrici, and was slightly inflamed; the other viscera were healthy.

M. Trolliet, in his remarks upon this case, says, that the Opium with the Carbonate of Potash was given in such a manner as to determine its effects on hydrophobia; M. Bouchet, surgeon to the Hôtel-Dieu, at Lyons, having given it with great success in traumatic tetanus. The author accounts for the emphysematous state of the lungs, by conceiving the violent and convulsive action of the muscles of the chest to have been sufficient to rupture some of the air-cells: " How came the air," he asks, " into the aorta, which escaped from it so abundantly upon opening this vessel?"

Berthet, aged sixty-one, was bitten by the same animal in the face. He presented himself the following morning at the Hôtel-Dieu, when the actual cautery was applied to the injured parts, which were afterwards dressed with a strong solution of chlorine in water twice every day; this remedy was exhibited at the same time internally. On the 17th some precursory ailment could be detected; but hydrophobic symptoms were not established until the 28th. An enema, composed of a strong decoction of kino, which was charged with hydro-sulphuric gas, and in which were dissolved two drachms of the extract of Opium, was administered. The injured part exhibited no appearance of irritation. He was bled to sixteen ounces, and ice was kept constantly to his head. Vesicatories and sinapisms were applied to his limbs and feet; and purgatives were prescribed by the mouth and in enemata. A bolus of gum and nitre was given every quarter of an hour, and in addition to the irritants to the lower extremities, leeches were repeatedly applied in that situation. Camphor was afterwards given every half hour, and the application of the ice was unremittingly continued. A frothy mucus, which appeared to be driven from the trachea by the quick and violent expirations, was continually ejected from the mouth. He expired on the 30th. The body was carefully inspected the following day.

The dura mater was of a natural appearance; the longitudinal sinus was gorged with blood; a gelatinous stratum covered the surface of the brain; a puncture of the pia mater allowed a quantity of limpid serosity to escape, which had been infiltrated through its cellules, and the gelatinous stratum disappeared: this membrane every where presented an injected state of its vessels. The substance of the brain appeared natural; the choroid plexi were slightly red; the rest of the brain, spinal cord, and their membranes, were perfectly healthy. The salivary glands were of a natural size and colour; the larynx was without alteration; the trachea a little inflamed; the bronchiæ of a greyish appearance, and without any mucus in their canals. The lungs were a little reddened, and emphysematous in their anterior portion. The heart was soft; the left ventricle empty: a liquid black blood, which presented a multitude of oleaginous points, filled the right ventricle and both the auricles, and also the sub-clavian veins. The stomach and intestines were distended with air. No other diseased appearance could be traced in any of the organs or textures. The narcotic enema administered in this case, produced, along with a slight sedative effect, a convulsive spasm of the limbs, similar to that observed by Professor Chaussier, when experimenting with the same substance—the sulphurated hydrogen gas.

Rigaud, aged twenty, was bitten on the 22d of May, in the face. The wounds were washed soon after with a weak solution of salt; he afterwards took the popular remedy, and was subsequently subjected to a mercurial course: this was left off soon after the system had come fully under its influence, and then large doses of camphor was taken daily, during a month. Depression of spirits, with precursory ailment, supervened; and at length the disease burst forth with its usual violence. The treatment resorted to was similar to that employed in the foregoing case. Ice was applied to the head; blisters and sinapisms to the nape of the neck, thighs, and legs; blood-letting, general and local, was had recourse to; and camphor and oxyde of bismuth, &c. were prescribed internally. After exhibiting exquisite sensibility of all the organs of sense, and spitting continually a viscid frothy matter, he expired on the third day of the disease. The body was inspected the following morning. The pia mater was gorged with blood through its whole extent; the sinuses contained a liquid blood, and the cerebral substance appeared soft; the brain, cerebellum, and spinal chord, presented no other lesion. The larynx and trachea were inflamed, especially in the intervals between the cartilages, but they contained no mucus. The inflammation extended through the bronchiæ;

the right was filled with a froth white as snow. The mediastinum was the seat of emphysema, which extended to the intermuscular cellular tissue of the neck, and to a portion of the mesentery near the crura of the diaphragm. The right ventricle of the heart, and both the auricles, contained a liquid black blood of an oily appearance. The other viscera were natural.

After relating the histories of those who died in the country, from the injuries which they received at the same time with those whose cases we have endeavoured to abridge, M. Trolliet gives the account of *J. C. Gueyette,* aged thirty, of a strong constitution, who was bitten in the hand by a dog, that died rabid in the Veterinary School at Lyons, in June, 1816. This individual, five months and a half after the injury, experienced pains in the injured hand, which gradually extended to the arm and neck. Two days afterwards he had a sensation of a vapour or aura, which ascended from the abdomen to the head, accompanied by general uneasiness. On the following day the hydrophobic symptoms were manifest. Ten grains of camphor, with an equal quantity of assafœtida, procured some hours of ease. But the repetition of the remedy failed in procuring any relief. On the morning following the first appearance of the hydrophobia (9th of December), M. Trolliet prescribed blood-letting to syncope: five pounds was taken away before that effect was produced. The return of the cerebral functions was immediately followed by the hydrophobic spasms, which were induced by every thing calculated to affect the senses. At eleven o'clock the same morning he was again blooded to the extent of eighteen ounces, when deliquium was produced: the spasms afterwards became more constant. At three o'clock the same day fourteen ounces was taken, when the pulse ceased to beat: the hydrophobia increased, and the contractions of the muscles of the chest, neck, and members became more convulsive, as soon as the functions of sense returned. At seven the same day the respiration became frothy and difficult; the contractions of the respiratory muscles more permanent, and in a few minutes he expired. The blood taken away did not separate into coagulum and serum, but was converted into one consistent mass. The spinal chord was the only internal part examined, which, with its membranes, appeared perfectly natural.

The very decisive and large evacuation of blood evidently hastened this case to a fatal crisis. The temporary advantage derived from the exhibition of camphor, at the commencement of the disease, might have pointed to an opposite mode of treatment. In a disease, which exhibits in its precursory ailments,

and in the majority of phenomena, which in its more advanced stages, display so great a deficiency of nervous energy; we cannot conceive that any treatment, which tends to depress still further the vital influence, can be of any service. Upon examining a very great number of authentic cases of this disease, we could detect none in which remedies of this nature were employed, without the evident effect of rendering the disease of shorter duration; this may, however, be considered an advantage, since there is so little hopes of attaining a greater. But we must proceed with our ingenious and esteemed author.

Girandet, aged fifty, of a strong constitution, was bitten in the right hand by a small dog on the 3d of August, 1818. On the 11th September, a swelling and feebleness was experienced in the arm; this was increased on the 12th, and was accompanied with horror at the sight of water: he was received into the Hôtel-Dieu the same day. The symptoms were aggravated on the 13th, when he commenced taking the powder of the *alisma plantago*, in doses of one dram, frequently repeated, and which was afterwards increased to two drams. The arm continued swollen and enfeebled, but the colour of its skin, and its heat and pulsation, were the same with the other limb. He complained of no head-ache; the pupils were dilated. He evinced no desire to bite. " La main placée sans intention sur les organes génitaux, cause une sensation voluptúeuse sans erection, et remène le spasme hydrophobique. Il exprime les regrets d'être ainsi libertin, malgré lui. Il répète qu'il menoit une vie régullière. Le soir, a sept heures l'agitation est plus grande; l'ardeur vénérienne s'est accrue: il dit que s'il avoit eu sa femme auprès de lui, il auroit satisfait ses desirs."

He continued to spit a frothy mucus, and expired on the third day of the treatment. The body was inspected eighteen hours afterwards. The abdomen was distended by air contained in the stomach and intestines. The limbs were stiff, but the body exhaled a fœtid odour. The veins of the dura mater were gorged with blood; a large gelatinous infiltration covered the superior and posterior half of the cerebrum. The pia mater was inflamed, and its capillaries injected. The plexus choroides were of a brownish red. The brain was softer in its consistence, and its cut surface exhibited a few red points; congestion was also present in the vessels of the cerebellum and spinal cord. The blood in the cerebral vessels was black, liquid, and of an oily appearance. The dura mater and arachnoid offered no alteration; the larynx and trachea were apparently inflamed. The lungs were soft, crepitating, and of a reddish grey colour. The heart contained black blood on its right cavities. and bubbles of air were

slowly disengaged near the columns of the left ventricle. The abdominal viscera were sound.

The author next proceeds to the *second part* of his treatise, which is entitled, Researches respecting the Anatomical Pathology of this Disease. The materials are derived from his own dissections, the chief of which we have endeavoured to condense within our own limits, and from the writings of those who have treated on the same subject. M. Trolliet, reasoning from the appearances met with in his dissections, and from the number of cases recorded by former writers, wherein the morbid structure was similar, arrives at the conclusion, that the poisonous virus is not furnished by the salivary organs ; but that it is a morbid secretion from the mucous membrane of the bronchiæ, or air-cells. This morbid matter he never once met with in the mouth or pharynx of any of the cases which came under his own observation. It was present in the bronchiæ and trachea in the majority of instances ; aud the mucous membrane lining these passages, or extending to the air-cells, always exhibited appearances of inflammation. But, in justice to the indefatigable researches of our learned author, we must give a summary of the pathology of the disease, nearly in his own words. To this he is more entitled, because he has furnished materials from the best sources, displaying new and important views upon this subject ; and has gone far to remove that empirical knowledge which was alone entertained respecting this dreadful malady ; and if no other advantage should result from the secrets which he has disclosed by his dissections, the knife of the pathological anatomist will be hereafter directed to an important organ, which was formerly never suspected of being the chief seat of morbid appearances, nor of furnishing the poison which human science has hitherto failed to counteract.

1st. "The organs of respiration, and the vascular system in the brain, present constant marks of derangement in rabies. The other organs offer nothing that can be rigorously attributed to this malady."

2d. "The salivary glands, and the cellular substance which envelopes them, present not the least vestige of inflammation, nor any change in their volume, nor in their colour nor texture."

3d. "The mucous membrane of the mouth and pharynx are of a pale grey, and lubricated by a gentle moisture ; these cavities contain no saliva, nor any frothy matter."

4th. "The larynx is rarely inflamed, the trachea more frequently, especially in its inferior portion ; the bronchiæ always. In rabies, the capillary vessels of the lungs are penetrated by a greater quantity of blood than during their ordinary state ; because this organ was red in all my dissections, and in the other

observations which I have quoted. The sensibility of this viscus is also greatly increased ; a burning heat, pain, and constriction are experienced,—pathognomonic symptoms of the inflammatory action."

5th. " This inflammation of the lungs is specific, and arises from the virus of rabies, as the varioloid irruption from the virus of the small pox."

6th. " That the inflammatory appearances are present in different degrees in different subjects."

7th. " This inflammation has its seat in the mucous membrane of the trachea and bronchiæ ; the cellular substance of the lungs and its serous membrane, do not appear to be altered."

8th. "A frothy mucus is generally found in the parts inflamed ; sometimes in the larynx, oftener in the trachea, towards its lower portion, it is generally found in the bronchiæ, and it may be squeezed from the air-cells and tissue of the lungs. This frothy matter is a product of the inflamed mucous membrane, and is driven over the lips of the rabid person in the last stage of the disease, when the respiration is quick, violent, and stertorous.

9th. " I consider that the frothy matter, driven by the spasmodic expirations from the air-passages of the lungs over the lips, is the true vehicle of the virus of rabies, and not the saliva ; because the salivary apparatus is not the seat of any pain during the course of the disease, and because they present no lesion after death ; because the bronchia are inflamed, are the seat of pain, and furnish a diseased secretion ; and moreover, in all contagious diseases, the virus is produced from the part inflamed, as, for example, in gonorrhœa, small-pox, &c. The saliva, therefore, is no more the vehicle of the virus of hydrophobia, than the semen is, of the virus of syphilis."

This is a point of the utmost interest to pathologists. We must confess ourselves convinced by the author's observations, supported as they undoubtedly are by numerous analogies ; and we consider the important inference which he has here drawn, as pointing the way to more general, and very interesting speculations. For our own part, we hesitate not to believe, that a morbid secretion from any mucous membrane is capable of producing the same malady, when applied to a similar tissue in an healthy individual. This fact has been established to a certain extent by the observations and experiments of Dr. Vetch ; and, although the different animal poisons appear to produce specific or peculiar actions in the part primarily affected, and in the general system, yet they seem to possess common generic characters, and to be the result of general and undeviating laws

of the animal economy. Some of them are confined in their sphere of action, producing only slight local effects ; others, along with local changes, which cannot be appreciated by the senses, produce constitutional disturbance of the most dangerous magnitude. If an extended view be taken of the various animal poisons generated in the course of disease, and perpetuating a similar morbid action in healthy individuals, we shall find that they are secretions, either from mucous surfaces, or from the skin which possesses an analogous texture. The sensible character of the virus, and its external properties, may be indicative of the disease which it will generate ; each virus perpetuating itself in another animal; and although several morbid poisons may be generated from one tissue at different times, yet still their characters will be as different, as the constitutional and local disturbance which gave rise to their secretion.

What is the animal poison which is produced in the course of typhus fever, or in scarlatina, or in the plague, but a virus generated in the mucous tissue of the skin, and which, from the state of attraction between its particles, or from some other cause, escapes along with the cuticular discharge? We find the greater number of the animal poisons produced from the skin, and when their production is accompanied with acute fever, possessed of properties arising from their state of fluidity, or from the manner in which they accompany the perspired matter, rendering them capable of being disseminated in the atmosphere. They, however, have the advantage of making, while in that state, a simultaneous impression upon an extended surface of the body ; and hence, partly from that circumstance, and also from the natural properties of the virus, the constitutional impression and the general disease is more speedily effected. Others, which are generated in a more viscid or consistent form, and whose application is limited to a few points of contact, are slower in their progress, as in rabies and in syphilis ; but they enjoy, in many instances, an advantage of offering a more permanent source of infection.

We consider, therefore, that M. Trolliet has both observation and analogy in his favour, when he asserts that rabies is propagated by a virus generated in the mucus membrane of the bronchiæ, during the advanced stage of the malady, in the same manner as any other virus is formed upon mucous surfaces during the progress of contagious diseases. But to proceed with our author :—

10th. " The lungs were sometimes emphysematous."

11th. " The heart, and large vessels also, sometimes contained air."

12th. "The blood was black and liquid; it did not coagulate upon exposure to the air; and it exhibited an oily appearance. The blood taken from the veins during the disease, coagulated without separating into the usual constituents."

M. Trolliet proceeds to sum up, very circumstantially, the appearances of congestion observed in the vessels of the brain. These we have already given sufficiently in detail; and notwithstanding our author's belief to the contrary, we cannot help viewing those appearances as merely the result of the interrupted circulation and decarbonization of the blood in the lungs.

The *third part* of the work gives a general history of the characters and phenomena exhibited by rabid individuals, from the period of the inoculation until the termination of the disease. M. Trolliet, after making some sensible observations respecting the state of the animal that has inflicted the injury, and remarking upon the errors which may result from a want of a proper examination into this point, next combats the opinions of those who deny the existence of a contagious virus, and believe the malady to arise from the influence of dread upon the imagination. He next proceeds to give the most decisive proofs of the presence of a morbid poison, and of its producing its effects from inoculation. The former position is proved by the circumstance of the cattle that were bitten, being the first to experience the disease; and by the persons who were wounded immediately on the skin having sunk under the malady, while those who were injured through their clothes experienced no ailment. The latter point has been established by experiments performed on the lower animals, by inoculating them from the human rabid subject. A multitude of proofs might be adduced in addition. The rabid virus he considers to be the same in all animals.

M. Trolliet next offers some observations upon the varying duration of the period which elapses between the inoculation of the disease, and the time in which it unequivocally declares itself. This interval he aptly calls the period of incubation. He considers that the disease is seldom developed before the eighth day after the injury; he, however, quotes instances in which rabid symptoms appeared the day following that on which the injury was received. The duration of this period is very variable; it frequently extends to six months. Apparently authentic cases are given of a much longer time, and some authors instance others, in which years elapsed between the receipt of the injury and the accession of rabies. Our author next enumerates the causes which tend to hasten the production of the rabid paroxysms. These are, exposure to the sun; sudden fright;

dread, or any of the depressing passions ; an injury received upon the cicatrized bite, and peculiarity of temperament. The author afterwards proceeds to remark upon the precursory symptoms ; these are, sometimes pain and lividity of the bitten parts, pain in the head, diminished energy of the digestive organs. These symptoms are only occasional ; the following are more constant :—Timidity, with great nervous sensibility ; fatigue, upon muscular exertion ; continued lassitude ; great depression of the animal spirits, and sometimes extreme sadness ; considerable acuteness of intellect, and of the senses ; and a more frequent pulsation of the heart.

It is unnecessary for us to say any thing respecting the symptoms which constitute rabies, when it is fully developed. In justice to M. Trolliet, we must however state, that he describes and remarks upon them in a very lucid manner. After treating the phenomena that are invariably met with in this disease, he next comes to the consideration of those, which are only occasionally observed ; such as dread of light and fresh air, and of every thing calculated to excite the sensations ;—delirium, satyriasis,* alterations in the voice, and attempts to vomit, are of still less frequent occurrence.

Our author never met with any desire on the part of his patients to bite, or to commit any violence. We have seen an hydrophobic individual, under the influence of a violent rabid paroxysm, in which he had the appearance of attempting to dart upon the person opposite to him, and would have done so, had he not been restrained by force. This impulse was quite involuntary on his own part ; he even exerted his reason to prevent it. This paroxysm of violence was of frequent occurrence in the twenty-four hours ; the mere mention of such a seizure was sufficient to induce it. It was, independent of the convulsive spasms, produced by the sight of water, or of any attempts at swallowing. From the account of the patient, it appeared to arise from an indescribable sensation felt at the moment of its accession, about the pit of the stomach, and in the region of the heart. We referred, at the time, this impulse to some irritation in the nervous ganglia in that situation.

M. Trolliet says, in the chapter upon the duration of the

* This symptom was met with in the case in which the *Alisma Plantago* was given in large doses. This medicine was greatly vaunted of in Russia as a remedy in rabies ; it was purchased by the Russian Government at a great price, but has not been found to succeed. It evidently, however, lengthens the period of the disease. Its action appears to be stimulant and aphrodisiac.

disease, that he never knew the patient to live beyond eighty hours after the malady had declared itself; nor did he lose one under thirty hours of suffering. Its duration is certainly greatly modified by the plan of treatment pursued.

In the subsequent chapters, which constitute the *fourth part* of his treatise, he enumerates the diseases in which hydrophobia sometimes occurs as a symptom; which have led some individuals to confound rabies with such maladies, and to advocate the opinion, of the generation of spontaneous rabidity in the human species, independent of any inoculation of the morbid virus. These are imflammation of the membranes of the brain, or of the brain itself, tetanus, epilepsy, hysteria, melancholia, hypochondriasis, inflammation of the larynx and trachea, in several diseases of the respiratory organs, and in some anomalous affections, which can with difficulty be referred to any given acute disease. This symptomatic form of hydrophobia, M. Trolliet considers as essentially non-contagious, although frequently confounded with the true rabies contagiosa, by writers whose attention had been chiefly occupied by the hydrophobic symptom. He justly views those cases of hydrophobia, that has been said to have been cured, as well as some cases of the disease attended with anomalous circumstances, as belonging to this class of disorder, and by no means the result of a morbific virus.

M. Trolliet, in his article on the classification of the disease, takes notice of the very discordant opinions of authors upon this point. Nor could they fail of being vague, while nothing certain was known respecting the nature of the disorder, and while pathologists were at a loss to determine what system, texture, or organ, exhibited marks of lesion from the disease. Some considered it a nervous disorder, and directed their post mortem researches to the different sources of nervous energy, according to the pathological fashion of the day. At a time when all influence was supposed to descend from the brain, that organ was considered to be its chief seat. Afterwards, when a new light broke in upon the spine and its contents, they were believed, whatever might be the appearances exhibited, to be the source of mischief. Our own conjectures led us to dissect out, and to examine, the principal ganglia supplying the thoracic and abdominal viscera, in a rabid subject. And whoever could not find diseased appearances of sufficient magnitude, to be reconciled with their theories, had a refuge left in the idea, that it was in vain to look for material lesion in a disease, evidently of function, and in one, which even involved the mysterious connexion of vitality with matter. Other pathologists considered the

disorder as essentially inflammatory; while some viewed it as partaking of both characteristics, and exhibiting, along with extreme nervous symptoms, marks of inflammation in various organs and tissues. Among this last class of inquirers, our author ranks himself, and says, that the morbific virus produces, along with great nervous disorder, inflammatory symptoms in the brain, and in the organs of respiration; and that the mucous membrane of the latter viscus generates anew the morbid poison.

We are aware that both Fothergill, Parry, and Lalouette, had observed appearances of inflammation in the larynx and trachea. Fothergill was therefore induced to view the disease as a spasmodic angina. Parry considered that the part primarily affected, and which gave rise to the hydrophobic symptom, was the upper portion of the trachea, with other parts of the respiratory organs. M. Lalouette found in his dissections of rabid cases, " a frothy matter in the pharynx, larynx, trachea, and in the large divisions of the bronchiæ;" but he merely states the fact without farther observation. Dr. Parry makes no mention of the presence of any secretion in those organs; his examinations appear to have been confined to the upper portion of the air passages, and he seems to have drawn no important pathological deductions from what he has observed in that situation. M. Trolliet attributes not only the most constant organic lesion to this viscus, but also supposes it, on very good grounds, to be the part which furnishes the morbid poison, and which, from the inflammation of its surface, and the obstruction presented by the secreted matter, admits not the usual changes to take place in the blood circulating in the lungs. The defect of these salutary changes in this fluid, he considers as the immediate cause of death in the rabid animal.

The *fifth part* of our author's work commences with the consideration of rabies in the lower animals. He believes, in common with many former writers, that the disease may be generated de novo, in opposition to those who conceive that it can arise in no animal without preceding contagion; but he confines the spontaneous generation of the contagious virus of the disease to the dog, the wolf, the cat, and fox, other animals receiving the disorder from them by inoculation. It has been asked, do herbivorous quadrupeds communicate this malady when they become affected? M. Trolliet answers in the affirmative, but allows that the disposition of their teeth is an obstacle against its communication.

The cause of rabies making its spontaneous appearance among animals who are its subjects, next employs the attention of the author. He shews by a table, in which are arranged the

number of wolves, dogs, and cats affected by this disease in every month, that the seasons have no influence in its production. Travellers have also shown its infrequency in warm climates, without being able to adduce any satisfactory reason for the exemption. M. Trolliet concludes the subject with observing, that all the commonly assigned causes are fallacious, and by expressing his ignorance of even a probable source, and that, therefore, nothing can be said with any degree of certainty upon the subject.

The author next treats of the symptoms of rabies as they are manifested in the dog. These need not occupy our attention farther, than by observing, that the hydrophobic symptom is almost peculiar to the human subject: both dogs and wolves, not only drink greedily, but also swim across rivers while under the influence of rabies.

The following article is on the affinity of the contagious virus with the fluids and humours of the body. Respecting the nature of this poison, it is impossible, in the present state of our knowledge, to determine.

" What are the humours of a rabid animal which contain this virus, and are capable of communicating the disease ? Does it reside in the blood ? Does it penetrate the muscular fibre ? Is it present in all the secretions, in the perspiration, in the pulmonary transpiration, and in the seminal fluid ? Is it the saliva which is its vehicle, or the mucus from the air passages of the lungs ?"

M. Trolliet answers those questions in detail, by direct experiment and observation, as well as by creditable authority. He disproves the supposition that the disease can be communicated either by the flesh of the animal enraged, or by its blood, milk, or seminal fluid. Some of these proofs, both such as are furnished by himself or by other writers, are curious, but our space cannot allow us to transcribe them. The breath and perspiration of the diseased is readily disposed of, when he arrives at the principal position, which it is his object to establish. He denies (as we have already seen) any contagious property to exist in the saliva, farther than what it may derive from becoming mixed with the matter driven out of the bronchiæ, and concludes with arguments which amount to this : That the pathology of contagious diseases in general, ought to lead us to expect the morbific poison in this, to be a secretion from that surface which presents the most constant and most marked signs of inflammation ; and the more especially, when those appearances are observed in a mucous membrane. Little can be adduced from any known property possessed by the matter

secreted from the inflamed membrane of the bronchiæ, which, by a more intimate analogy, would tend to support this opinion; but, from some observations which we have ourselves made, we consider that diseased secretions from these surfaces are, in several affections, capable of perpetuating their kind.—It is from this property, in our opinion, that common catarrh, the more severe kinds of bronchitis, and even pulmonary consumption itself, at least, that species of it which consists in an inflammation of the mucous membrane of the lungs, will become contagious under circumstances calculated to favour such a communication of disease. Thus, it has been observed in countries bordering upon the Mediterranean, that a healthy individual, of ordinary susceptibility, who shall sleep during a night in the same bed with a phthisical patient, or one afflicted with bronchitis, runs imminent risk of being soon affected with a similar disorder. Such property may not, perhaps, be so remarkable in this country, so far as it relates to pulmonary consumption; but in the other affections, implicating this membrane in its distribution to the lungs, it cannot fail to arrest the attention of the close inquirer. The same circumstances may also be observed among the lower animals, and more especially among their young, who, by a more intimate connexion and contact with each other, favour the evolution of this quality in diseases affecting this tissue. Nothing can be said respecting the effects which would result from the inoculation of these secretions, in any of the other textures, or even in the same, unless it was made the subject of direct experiment : nor could it be expected that any, excepting the most concentrated or most virulent, could make any severe constitutional derangement if communicated in this manner.

M. Trolliet next goes on to inquire, respecting the channels through which the rabid virus affects the system, and the first consideration connected with this subject is, what surfaces are permeable to the influence of this poison ? He concludes, after quoting many authorities, and circumstances which came under his own observation, that the frothy matter from the bronchiæ will not produce the disease from being applied to the skin, unless the cuticle be abraded; nor will the blood or humours, or other secretions of a rabid subject, give rise to it, after a scratch or injury received during its dissection. Our author cannot so easily decide respecting the probability of its being transmitted through mucous surfaces. There are positive facts upon record, both in direct favour and in opposition to the conclusion in the affirmative. Such result, certainly both may, and may not take place, according to the various concomitants

and circumstances connected with the individual running the risk. Respecting its effect when applied to a wounded surface, when it comes in immediate contact with the nervous fibrillæ, and the open mouths of the vessels, there can be no doubt.

M. Trolliet next proceeds to inquire into its mode of affecting the system, after it has been received into the wound. The oldest opinion was, that the virus was absorbed and mixed with the circulating fluid, and thus produced a general infection of the humours and solids of the body. A subsequent theory ascribes its action to the effects produced in the place injured, and the propagation of this lesion through the whole nervous system. Both these theories M. Trolliet considers equally erroneous. That the secretions and humours are fully infected he considers as completely disproven by his own observations, independently of those of others; and the local effects bear no proportion to the subsequent constitutional disorder, so as to furnish an argument in favour of the disease arising from the propagation of the local impression throughout the rest of this system. He concludes that the action of the virus upon the constitution is entirely unknown but in its effects, yet we may be allowed to theorise respecting the more probable course which it pursues in accomplishing its end.

"The poison of rabies," says M. Trolliet, " has a specific action upon the organs of respiration, and upon the brain, as the varioloid virus has upon the skin. Is it by absorption that this specific action establishes itself? But the lymphatic vessels are the organs of absorption, and the blood to which it would thence be conveyed would become infected. But the virus cannot be shewn to be present in either. Is it through means of the nervous influence? But granting that to be the case, how does the nervous influence explain the reason of a specific action being exerted in these organs, and the formation of a new contagious principle." Here the action of this morbific virus is exactly on a footing with that of every other principle of contagion with which we are acquainted; the exact process which it performs in accomplishing its effects cannot be ascertained, it can only be presumed, from those steps which are cognizable to the senses. M. Trolliet, considering that he has established the alteration of structure in the mucous membrane of the bronchiæ and air-cells, thinks that the changes effected in the blood in the lungs are thereby obstructed, and hence it is always met with on dissection, black, fluid, and of an oily appearance. This impediment to the decarbonization of the blood in the lungs he attributes not to the altered structure alone, but also to the presence of the diseased mucus, and to the obstruction which it

offers in the very situation where the changes by respiration are effected.

" It is not, therefore, the immediate action of the virus which destroys life in this disease. If it possessed the faculty of anni-hilating life immediately, death would take place long before the usual invasion of the symptoms of rabies. But it would appear to excite the organs most important to life, to change their organization, and thence to destroy their functions. The brain and lungs are inflamed, the chemical phenomena of respiration are arrested, the black blood can neither stimulate the brain nor the heart, the air introduces itself secretly into the circula-tion : these are the causes of the phenomena which constitute rabies, which vary according as the brain and the lungs are more or less inflamed."

M. Trolliet is not so satisfactory respecting his mode of ac-counting for the air observed in the cavities of the heart, in the structure of the lungs, and that contained in the digestive canal. We are by no means inclined to consider that such air is common atmospheric air, until it be proved to us by direct experiment. We will not even make this concession in favour of that which is almost invariably found distending the stomach and intestines : that it does not arise from the ingesta contained in these viscera, is easily shown by the state of their contents.

Were we allowed to form an hypothesis to account for these appearances, we would be inclined to consider that the same alteration of texture in the mucous membrane of the lungs, and the diseased secretion, lining, and further obstructing the func-tions of that membrane, would not only impede the separation of carbon from the blood in that situation, but also the evo-lution of any gaseous element, or product that may exist in the blood, or be produced from it during its circulation through the various textures. The evolution of this gaseous element or product, whether hydrogen or carbonated hydrogen, might still take place in part, and give rise to the frothy appearance which the diseased mucus assumes from mixing with that substance in the bronchiæ and air-cells. As the obstruction to the exha-lent extremities of the vessels opening upon this surface becomes greater, the accumulation of this gas in the blood would en-crease, and it would then be disengaged from the surfaces of the other mucous membranes, as in the stomach and intes-tines, and thus give rise to the very distressing symptoms of flatulence always present in the last stage of the disease; it would be also disengaged, but to a much less degree, in the loose cellular texture of the lungs. After death, when all the surfaces and the extremities of the vascular system becomes

relaxed, it would disappear from the vessels, at their extremities, in the mucous tissue, and become lodged in the stomach and intestines. May not the peculiar fœtor, which exhales from a rabid subject soon after death, arise from the evolution of this gas, or air, from the system? May not, also, the oily appearance exhibited by the blood, be the result of some combination, which the carbon and hydrogen existing in it enters into when these elements are not separated from this fluid, by the organs appropriated to that purpose?

M. Trolliet proceeds to the consideration of the prognostic that ought to be formed from the bite of a rabid animal. As the nature of the virus is the same in all animals affected with this malady, so all injuries inflicted by their teeth are equally dangerous. He considers that the poison is not produced before the rabid symptoms are fully declared; therefore, bites before that period are innocuous. The seat of the injury inflicted by a rabid animal is of great consequence, also its depth and extent, as they regard the prophylactic measures that ought to be employed. Those made through the clothes are, generally, not followed by a seizure of the disease, unless the matter left upon the clothes comes in contact with the injured surface.

We at last arrive at the *sixth* and last part of our author's treatise, which he devotes to the consideration of the treatment of the malady. We enter upon this very unpromising subject with despair, yet we ought not to relax in our endeavours to save the patient, even after rabies has fully developed itself. The prophylactic treatment can be alone, however, looked to with any hopes of success, and ought to be instantly and strenuously resorted to. Nor, in the present state of our ignorance regarding the process, which the virus performs in the animal economy in performing its dreadful purpose, ought preventive measures to be neglected, even at a remote period from the receipt of the injury. The earliest and most successful local treatment, and the one which the experience of all ages and countries, however barbarous, has led them to adopt, is to remove, or to destroy, the virus existing in the wound; to these two methods may be added a third, namely, to prevent the extension of its influence, until the part affected may be removed or destroyed, by extirpation or caustics. The first end is obtained by immediate suction of the part bitten, accompanied by pressure, in the direction of the axes of the divided vessels, and towards their extremities; local blood letting, and scarification of the immediately surrounding part; the instant excision of the part in which the injury is situated; the imme-

diate and continued use of lotions. M. Trolliet advises, that the person injured should run to the first fountain or stream, and bathe the part assiduously. To obtain the second end, namely, the destruction of the virus in the injured part; frictions, suppuratives, various medicated lotions, and mercurial frictions, have been recommended ; but no dependance can be placed upon their efficacy. The third indication is fulfilled by applying ligatures, or pressure, above and below, or around the part, until it can be removed by the knife, or destroyed by caustics, or the actual cautery. M. Trolliet treats this part of the subject at great length, but as most of our readers will agree with us, that nothing less than the immediate excision of the part can insure safety, we have contented ourselves with an enumeration of the methods that may be employed, either of which may be chosen, according to appropriate circumstances.

The general preservative treatment to be enjoined, after the local prophylactic means have been resorted to, is either rational or empirical. The former is that which is had recourse to from pathological views ; the latter is the employment of some particular remedies. As the one method will be entirely the result of opinion, and the other the mere usage of various substances, all of which have been found to fail, we shall not waste space upon what may be found in almost every writer upon the subject, and therefore affording no novelty. Respecting the treatment that may be had recourse to, upon the appearance of declared rabies, neither our author, and much less ourselves, can presume to recommend any, seeing that every substance that has been hitherto employed, has been found of no avail. It would be worth while, (judging from the appearance of the blood in the dead subject,) to try the effect of inhaling the nitrous oxyde, or even oxygenous gas. To such of our readers as are anxious to be informed more in detail upon this subject, we can recommend the work as both ingenious and learned. The dissections are also minute, and display great anatomical knowledge. The last form of Ploucquet's Medicina Digesta, furnishes an immense accumulation of information upon this subject, and which will fully reward the curious enquirer.

ART. VII. *De' Contagi e della cura de' loro Effetti, Lezioni Medico-Pratiche del Cavaliere V. L. Brera, M. D. Consigliere di Governo di S. M. I. R. A. Professore di Terapia Speciale e di Clinica Medica nell' I. R. Università, e Direttore dello Spedale Civile di Padova, &c. &c.*

Lectures on Contagions, and the Cure of their Effects. By V. L. Brera, M. D. &c. &c. 2 Vol. pp. 348-222. Padua, 1819.

So much has been written on the subject of contagious diseases, that the individual must be possessed of a great deal of ingenuity who shall bring forward any thing relating to them which was new, or had escaped the scrutinizing researches of those who have preceded him ; nor, in the present instance, are the interests of science so likely to be promoted by the inquiry after additional facts, (though these can never lose their value,) as by the arrangement and proper disposition of those which we already possess in such abundance. Were such a plan carried into execution, not merely as regards the subject before us, but in other instances, it can hardly be doubted that it must be attended by beneficial results, in removing or reconciling the ambiguities and contradictions which present themselves at every step we take in the sphere of human knowledge. In this point of view the Lectures of Professor Brera are of importance, as furnishing us with a complete summary of the knowledge we possess, collected from its scattered sources, and methodically arranged. At the same time it must be mentioned, that its value is considerably diminished, especially to foreigners, from the constant interspersion of obscure discussions on unimportant points, and of recurrences to the peculiar doctrines which at present supply the place of the principles of Brown, in the medical schools of Italy.

The nature of the work, and the mutual dependence of its different parts upon each other, are such as to preclude the possibility of giving a just idea of it by analysis, without devoting to it a larger share of the pages of our Journal than would be consistent with our plan, or than, perhaps, indeed the value of the work would justify. For this reason we shall content ourselves with extracting from Professor Brera's book some of the propositions he lays down, and conclusions at which he arrives.

By the name of contagion, the author understands an extraordinary morbific power, which is produced by a living organization in a state removed from health, and results from the perverted chemico-vital combination of the elements, which make part of the organic frame, in consequence of the fortuitous con-

course of certain extraordinary circumstances. A product of this nature, communicated in the sequel, by means of immediate contact, from an infected living body to another healthy one, reproduces and propagates in this last, by its own peculiar action, the identical form of disease by which it was itself generated. Although the nature and chemico-physical composition of contagions are unknown, it is certain that when introduced into the human body, the influence exerted by them on the living fibre is totally different from that of other more common noxious powers, and particularly from that attending on the abuse of the non-naturals. The action of contagions requires no predisposition to produce its effects, as they occur independently of the previous state of the system.

The action of contagions produces a change in the human body, when submitted to its influence, which is altogether independent of the customary change of vital action.

The action of contagions in its progress destroys or removes the susceptibility, which the living fibre possesses, of receiving its impression. This character of contagions is, however, subject to many exceptions, and cannot be considered as positive and specific.

Every individual contagion of those already known produces a change relative and peculiar to itself, and which can never exist at the same time with the change consequent on the action of any other contagion. When two contagions appear to proceed together, it is for the most part to be observed, that neither the one nor other form of disease runs its course perfectly.

The different contagions produce different forms of disease in the human species and in animals. It is true, that we read the histories of destructive epidemic diseases, in which both men and animals perished; but, such epidemics were rather atmospherical than contagious.

Contagious diseases possess a peculiar, determinate, and constant type in the periods of invasion, existence, and decline.

The noxious influence of contagions introduced into the human body excites there a form of disease, which passes through certain periods of a fixed and settled duration, and then ceases spontaneously.

Contagious fomites once introduced into the human body, and having exerted their noxious influence upon it, are not affected during the remainder of their course by any remedies yet known.

There is no ground for the belief of those, who think that epidemical and contagious diseases are the same in essence. The first arise and prevail in consequence of certain determinate

alterations in the proportions of the component parts of the atmosphere, resulting either from season, geographical position, changes in the mode of life, or the operation of unknown combinations. The same distinction exists between contagion and miasmata.

On the difficult and obscure subject of the primary origin of contagious diseases little is said, though Professor Brera concludes that they may occasionally be generated *ab origine* by the human body, when under certain peculiar and unknown conditions of disease. One of his principal arguments to this effect is founded on the occasional spontaneous generation of the contagion of hydrophobia in the human body; this we must confess is to us far from being a satisfactory one, although we see no reason to dispute the point he intends to prove. For one of two points must be admitted, either that our first parents contained in themselves the seeds of all contagious diseases, which is an absurdity; or that these diseases derive their origin from a peculiar combination of circumstances at distant periods. If we accept the last means of solving the difficulty, it is evidently within the range of possibility, that the combination of events, however peculiar, which has at one time given rise to any of these diseases may at some other period occur, and be attended by the same results.

When once the seeds of contagion, says Professor Brera, have been brought into contact with the living organized fibre, their effects may be separated into two distinct kinds, occurring at two distinct periods. The first consists in the impression and irritation made upon the susceptible fibre; the second in the physico-chemical action excited in the material elements forming the basis of every structure, and affording a regular support to the susceptibility of the living fibre. The first process affects the sentient system, and the second the materials of the organic structures. The second stage succeeds the first, but the first may also last through the course of the second, and of those which succeeding to it form the essence of the disease.

The diseases excited by contagions present us with a series of particular and morbid phenomena, which, by their appearance and decline, mark out certain determinate periods. It is true, that from the varied nature of these affections, and above all from their combination with others, it is not always easy clearly to distinguish these periods, though it may, for the most part, be done by observing the course of the diseases with attention.

The different periods which Professor Brera distinguishes, are, a stage of invasion; a second, of attack; a third, that of the specific action of the disease, that is to say, of suppuration,

when the affection is exanthematous, or of aggravation in other diseases and in contagious typhus ; and, lastly, a fourth stage, being that of concoction, or of the elimination from the system of the irritating matter, capable of continuing the perverted action of the vital powers in the whole system, or in the organs particularly affected.

The most valuable part of the work is, perhaps, the second volume, as being more practically useful, and less burthened with the unimportant and theoretical disquisitions which too often occur in the first. In fact, the whole work admits of compression in no small degree, and would be manifestly improved by the judicious employment of this operation.

Art. VIII. *Drs. Leopold Anton. Gölis, ausübenden Arztes und Direktors des Institutes für kranke Kinder der armen in Wien Praktische Abhandlungen über die vorzüglicheren Krankheiten des kindlichen Alters. Erster Band, Von der hitzigen Gehirnhöhlen-Wassersucht.* Wien. 1815.

Practical Treatises on the more important Diseases of Children, by Dr. L. A. Gölis, &c. &c. First Volume. On Acute Hydrocephalus. Vienna. 1815. pp. 285.

A Treatise on the Hydrocephalus Acutus, or Inflammatory Water in the Head. By Leopold Anthony Gölis, Physician and Director to the Institute for the Sick Children of the Poor, at Vienna. Translated from the German, by Robert Gooch, M.D. London. 1821. pp. 279.

THERE is, at Vienna, an institution for the relief of poor children who are unwell, where, on an average, more than four thousand patients are annually admitted ; and to this establishment a celebrated physician of the name of Gölis has, for the last twenty-eight years, been the chief medical attendant. Having, of course, enjoyed opportunities of observation which are unrivalled, and possessing, in a high degree, not only the talents necessary for accurate and laborious investigation, but also the most familiar acquaintance with the authors who have preceded him, he has produced the first part of a work, which, if completed in a manner corresponding to its commencement, bids fair to constitute the best treatise on the diseases of children, which has at any time appeared. The first volume, which is devoted to the consideration of Acute Hydrocephalus, has been lately

introduced to the notice of the Medical profession in this country by Dr. Gooch, and we shall endeavour, in the present article, by shewing its value, to make it apparent that we are under some obligation to that gentleman for rendering an excellent practical book more generally accessible. We have bestowed considerable pains in comparing the present translation with the corresponding part of the original work, and have satisfaction in bearing testimony to the faithful manner in which it has been executed, allowance being made for the very wide difference existing in the genius of the two languages. If trifling imperfections are occasionally to be found in it, they are, as far as we have examined, only of a verbal nature, and must be readily passed over, when the great dissimilarity between the object of scientific and literary translations, in general, is recollected. In the former the matter, and in the latter the manner, is of primary importance. Independently of this consideration, the numerous professional avocations of the translator would render any apologies perfectly unnecessary, even if they were required by other circumstances. With regard to the general execution of the task, however, we do not hesitate to express our opinion, that it is characterized by the same conciseness, originality, and force of expression, which so peculiarly distinguish the language of the translator in his lectures and conversation. We shall therefore, without further preface, enter upon the careful analysis of the most important parts of the translation, which, as far as it goes, so well supplies the place of the original; at the same time we take the present opportunity of announcing our intention of giving an account of the other part of the work of Dr. Gölis, on a convenient occasion.

Hydrocephalus, according to its history, is divided into the idiopathic, the symptomatic, the metastatic, and lastly, the sympathetic, when it arises from an affection of any organ that readily sympathizes with the brain. The author, in the whole course of his practice, has never met with any instance where the fluid was collected between the cranium and the dura mater; he also informs us, that many other physicians who have written on Hydrocephalus have had no opportunity of observing this species of the disease. Those who have recognized an Hydrocephalus Externus, and three species of Hydrocephalus Internus, have concurred in the opinion, that that in which the fluid is contained in the cavities of the brain itself is the most frequent, requires the promptest aid, and has been the most negligently observed. The disease may be again divided into the serous, the lymphatic, the puriform, and mixed hydrocephalus: in the last, extravasated blood is sometimes found, an example of

which is detailed by the author. But the division into the *hyper*-acute, the acute, and the chronic, is, in a practical point of view, of the greatest importance. Cullen comprehends the two former under the name of Apoplexia hydro-cephalica.

From having lately witnessed the first form termed by the author (wasserschlag) water-stroke, we are impressed with the excellence of the description which he has given of it: it is well named, and deserves to be distinguished, because, as those who are seized by it commonly perish before the most active remedies, applied at the earliest period, can have time to produce any effect, it is of consequence to prevent the reproaches of the relatives by exciting no hopes of the possibility of saving the patient. The division into which most of these cases are to be arranged is, the metastatic, because it often arises from what is called the metastasis of other diseases : in all of them death suddenly takes place, and on examining the bodies an effusion of lymph is found to have taken place generally into the ventricles of the brain itself. It would therefore appear, that the stages of turgescence, and of inflammation, are deficient, a circumstance which distinguishes it from the acute hydrocephalus. The stages of transudation and paralysis also run into each other, so that the two first cannot be detected, and the two last cannot be recognized : the traces of inflammation are, however, occasionally more or less distinct. The fluid effused is never so clear as in acute hydrocephalus ; there is also much less coagulable lymph, which Dr. Gölis therefore believes to be partly diffused in the serum. The attendants and relatives will most commonly contribute important information for the foundation of the diagnosis : but there are instances in which no cause of the complaint can be traced. The author relates the case of an infant, six months old, who went to sleep at the breast of its nurse, but was found dead the next morning : the vessels of the head were rather turgid, and about two ounces of turbid serum were found in the ventricles of the brain.

Of Hydrocephalus Acutus.—This part of the work, which by its excellence has deservedly called forth, from a recent German Reviewer,* the expression of (goldene blätter) golden leaves, is distinguished, by such surprizing accuracy of observation, and perspicuity of description, as to be obvious even on a superficial perusal. The effusion is always a secondary disease to a previous turgescence, and inflammation of the mem-

* See the Saltzburg Medicinisch-Chirurgische Zeitung, for March 22, 1821, page 385, where an analysis of the second edition will be found.

branes or vessels of the brain. It is naturally divided into four distinct periods or stages, viz. that of turgescence in the head, of inflammation, effusion, and paralysis. There is much difference in the opinion of various writers as to the symptoms which indicate the different stages. This depends not so much on inaccurate observation as on the irregular progress of the disease, when connected with other complaints, or when it follows previous chronic diseases, or acute fevers, with or without eruptions.

Of the first period or stage of turgescence.—Children begin to be indifferent to every thing ; their activity, vivacity, and good temper, vanish; they dislike light and notice, the lively colour of their countenance and brightness of their eyes begin to fade ; and their delightful sprightliness passes into dulness. Their bowels are confined, their urine scanty, their rest disturbed. The larger children, on sitting up in bed, complain of giddiness ; they are also subject to rheumatic pains in the limbs, but particularly in the nape of the neck, calves of the legs, and soles of the feet. The smaller children express the same feelings by a certain rocking of the head, by suddenly becoming silent in the midst of a cry, by whining, and moving their hands towards their heads. The pulse is irregular, and sometimes intermits altogether : it is commonly the seventh, ninth, sixteenth, seventeenth, or thirty-first pulsation which is weaker or deficient. From a state of reverie they are roused with a deep sigh, and begin again to notice those about them, of whose presence they had been apparently unconscious ; the colour of the face changes, and they are alternately flushed and chilly. When asked if any thing ails them, they answer with an indifferent " No." They walk without firmness, and in stepping forward, they often raise the foot as if they were stepping over a threshold ; they totter and stagger as if drunk. Although most of these symptoms may frequently precede other diseases, a careful consideration of all the connected circumstances, and of the great frequency of the acute hydrocephalus, will guide us in the diagnosis.

In feeble, irritable, sensitive children, the beginning of this destructive disease is almost always overlooked, because the additional symptoms are less distinguishable, and are easily referred to some other complaint. Dr. Gölis, indeed, ingenuously confesses, even after so long an experience as he has had, that he is unable to distinguish the symptoms of turgescence from those of the previous disease, particularly if he has not known the patient long before : in such instances, he felt compelled to form his diagnosis from what the by-standers related concerning

the progress of the complaint. Indifference succeeding to in-
creased sensibility and irritability ; constipation after an habi-
tual diarrhœa ; a scanty proportion of unusually yellow urine;
dryness of the skin, which was before excited to perspiration by
the slightest exercise; sleep often suddenly occurring in chil-
dren, who had before been restless ; remarkable gravity and
earnestness, which had never been previously noticed : all these
circumstances, combined with the symptoms above mentioned,
cause a just suspicion of the existence of the turgescence of
hydrocephalus.

It is equally or still more difficult to distinguish the stage
of turgescence in infants, who, though in a state of health,
frequently vomit, wake suddenly with a cry, become sopo-
rose from overloaded stomachs, and have irregular pulses.
Sleeplessness, unusually continued screaming, without any
other complaint ; hanging the head after such attacks ; alarm
on the gentlest touch ; an excssive quickness of hearing, so
as to be awakened terrified by the slightest noise ; diminished
appetite ; an entire absence of thirst ; a cry denoting pain, on
slight movements of the body, but suddenly becoming silent by
quick ones; constant pulling the nape of the neck with the
hand; increased warmth of the head, particularly of the fore-
head and nape of the neck: these symptoms, with the me-
morable frequency of the disease, are enumerated as addi-
tional guides for a diagnosis. Such, we are informed, is the
commencement of the disease which is the most frequent and
dangerous, both for the safety of the patient and the reputation
of the attendant.

Unfortunately, the most uncommon mode of approach is
that, where the healthiest children are all at once seized with
violent fever or convulsions, after a sudden attack of languor,
giddiness and head-ache, pulling at the nape of the neck, stiff
neck, inclination to vomit, full hard and slow pulse, sensibility
to light, and singing in the ears. If the practitioner is called
to this manifestly inflammatory affection, and employs the ne-
cessary remedies with activity, effusion may be arrested much
easier than in the former cases, and a greater number of such
sufferers may be snatched from death. But if a clear view of
the disease is not taken, and remedies are not applied with over-
whelming power, there follows most commonly in a few hours
the moment of effusion, which may be recognized by its charac-
teristic symptoms, and is soon succeeded by the paralytic state
and by death. This first stage often lasts only a few hours,
frequently but eight, ten, fourteen, and even more days.

    The second or inflammatory stage.—Here the symptoms of

the phrenitic state shew themselves : the patients complain of severe pains in the forehead, affecting the eyes, sometimes alternating with colicky pains ; also pains in the limbs, and a shooting sensation in the nape of the neck. There is no place where they can lie still, and no person who can soothe them : the eye opens perfectly in the dark only, being very sensible to light, and shrinks above the upper eye-lid. The head is hot to the hand, but neither it nor any other part of the surface of the body is red, nor turgid with blood. In the tumultuous accession of the inflammatory period there is, however, an exception in this point, for the tunica albuginea is streaked with blood-vessels, and the inner surface of the eye-lid is inflamed. In such cases only there are convulsive movements of the eyes; the pulsations of the carotids are strong; the pale countenance shrinks, and rarely becomes œdematous and distorted.

Among the pathognomonic symptoms of acute hydrocephalus, Dr. Gölis enumerates dryness of the nose, paleness, cessation of appetite and thirst; furred tongue; vomiting, which becomes less frequent as patients advance to the state of effusion ; the digestion of food is most commonly altogether suspended; the belly also, before tumid, falls away. At this period, there is tenderness on pressure on the region of the stomach and liver ; there is often obstinate constipation ; the urine is frequently scanty, passed with pain, and has a characteristic white slimy deposit ; the hearing now becomes acute, and even painful ; pains in the belly, nape of the neck, and particularly the head, are constantly complained of by moaning ; the sleep is disturbed often by dreams, in which they cry out; they grind their teeth also. Pressing questions only obtain answers, and those are short ; their movements are languid and compulsatory ; they cannot sit up without nausea and vomiting ; the pulse is slow, unequal, and intermitting, but easily accelerated in a moment by pain : the latter symptom is also considered by Dr. Gölis as pathognomonic of this stage. The skin becomes flaccid, dry, and discoloured, and an eruption sometimes appears about the lips, neck, and shoulders. They are restless, and desire to be moved from place to place. Those with a very slow pulse, complain of as much pain as those with whom it is accelerated.

The third, or stage of effusion.—The above symptoms, after a few hours or days, grow worse. They can no longer sit up; the restlessness ceases ; they most commonly lie on the back, and constantly kick up the bed clothes ; they carry their hands to their head, mouth, and nostrils, into which as well as into

their ears, they often bore so as to make them bleed ; they half forget the words they would say. All the external senses become dull or annihilated, except that of hearing, which is often quick ; the eyes are directed obliquely downwards ; the pupils are dilated and oscillating, but unaffected by strong light ; they often see double, or falsely ; at every deep sigh they moan, they often open and close their eyes repeatedly in a few minutes. A gloomy earnestness is painted in their flushed countenance, with a threatening expression : it is a curious contrast of fierceness and patience, which often excites the astonishment of by-standers. They waste to a skeleton ; their dry flabby skin hangs on their emaciated legs ; partial sweats break out. The urine is passed unconsciously ; there is constipation. The debility of the pulse, sighing, offensiveness of the breath, and general weakness increases ; coma comes on ; and, before the last tragic scene, they sometimes become conscious, so as to sit up to eat and drink. They sometimes even swallow with eagerness, long for their play-things, and deceive the attendant with momentary hopes, which are followed by more severe sufferings than before.

The author relates two cases in which the children appeared suddenly, but almost completely, to recover in every respect except in strength, so that he began to distrust his unfavourable prognosis, in all instances where the stage of effusion and paralysis have come on. But a relapse, after thirty-six hours in one, and forty-eight hours in the other, took place, and was speedily followed by death.

The fourth, or stage of paralysis.—After, from ten to thirty days, more frightful symptoms succeed : convulsions, followed by paralysis, most commonly of the right side, and often cramp, which draws the head backwards and downwards. The features are thus frightfully distorted ; a violent fever follows ; a perspiration trickles from the head ; a hectic redness alternates with a deadly paleness on the disfigured countenance of the patient. The sight is lost ; the pupil of the convulsed eye extremely dilated, and insensible to light, the tunica albuginea is blood-shot. The hearing from being quick gradually becomes dull, swallowing becomes impossible ; though there are often moments in which they can take fluids ; the urine is scanty, and passed unconsciously ; it continues of a deep yellow colour, with a white sediment ; the stools are still less frequent, but never fœtid, as in the former stages. In many, the tips of the fingers become blood-red, and afterwards, on the approach of death, pale. The pulse is still weaker, and more intermitting than

before ; the head however, remains warmer than the rest of the body ; the spasms, which draw the head backwards, and the arms against the sides, cease only with life.

After the most ample, and indeed almost cumbrous, description of symptoms of the acute hydrocephalus, the author has thought it necessary to give several chapters on the diagnosis of the disease ; but " as they are of minor value, needlessly minute, and in some parts of questionable accuracy," we pass them over without further notice. In addition to the above work of supererrogation, there are several chapters which are devoted to the consideration of the predisposing and exciting causes of the disease, which, " like similar chapters in other medical books, seem to be written for form's sake, and make pretensions to more knowledge than physicians really possess."*

On the treatment of the acute hydrocephalus, the author informs us, that in various works on the subject, he sought industriously, but in vain, for an accurate and precise statement, where, and under what circumstances, the various remedies should be employed. To supply this deficiency, to point out for each medicine its proper use, and determine the degree in which it was efficacious, he submitted the results of his great experience to a careful examination, and accurately wrote down what in each case and at each period was found beneficial and trustworthy. The treatment must be considered according to the four stages, into which the disease is naturally divided.

Treatment of the stage of turgescence.—It is very important to know whether any eruptions have been repelled ; old ulcers suddenly healed ; whether habitual discharges from various parts have been suddenly stopped ; whether the liver is diseased, or the mesenteric glands ; perspiration has been suddenly suppressed ; lastly, whether the brain has suffered any mechanical agitation. The plan of treatment must be directed not only generally against the disease, but specially according to the exciting cause, and the constitution of the patient. Great caution is required in moving patients, because all quick, rough motions occasion giddiness, and contribute to a more rapid developement of the inflammation. The temperature of the room must be rather cool than warm ; the head should be raised, and left uncovered ; even giving medicine by force must not be allowed. The means to be employed during the turgescence, to prevent the accession of inflammation, are calomel, emollients, antiphlogistics, internal and external evacuants, and counter-irritants.

---

* See the acute and candid remarks contained in the translator's preface.

Of all the medicines calomel is the most efficacious for acute hydrocephalus ; in the turgescence, and at the beginning of the inflammatory stage, Dr. Gölis considers it almost as a specific ; and has found that it supersedes the use of almost all other purgatives, except occasionally of jalap. The greater or smaller dose, the longer or shorter use of the medicine, depend not on the age of the patient, but on the peculiarity of constitution, and the more or less elevated irritability of the alimentary canal. Children of one year and under generally bear a far larger dose, as for example eight or ten grains in twenty-four hours, without its producing diarrhœa, colicky pains, or swelling of the salivary glands, than children of four, five, six, or eight years, who will scarcely take three or four grains before they begin to complain of pains in the belly. The author never saw calomel produce salivation within a few days, as some physicians have observed ; but he has seldom seen this appearance at all, and then only late, after a long perseverance in large doses. In children of from one to four months, a quarter of a grain ; in those from six months, to one or two years of age, half a grain of calomel, given internally every second hour, will be sufficient, until it has produced green slimy stools, for four or six times ; but not purging stools, against which Percival has already warned us ; or until sharp pains occur in the belly, which infants express by drawing up their legs and whining. In habitually constipated children, it is often necessary to give the dose of calomel every hour ; and in a high degree of insensibility of the alimentary canal, a few grains of *toasted* jalap are recommended, in addition to the calomel. The reason why Dr. Gölis prefers the toasted to the raw jalap is, that the latter often excites vomiting, which is carefully to be avoided, and does not so readily produce colicky pains.

If diarrhœa, or griping pains are excited, it is necessary to desist from the calomel until they have ceased, and to employ it again at longer intervals of time, as three or four hours, in half grain doses, until the above effects are produced. In this way the author perseveres as long as any important symptoms remain. He thinks that the effect of mercury externally applied is much too slow ; and that the patient, who is trusted to this remedy alone, as the progress of the disease exceeds the activity of the medicine, would soon be placed in a hopeless condition. Melancholy experience compels him to contradict Whytt, Odier, Quin, Wilmer, Leib, and other authors, who affirm that they have never remarked any bad consequences from the exhibition of calomel in doses of two, three, or more grains at a time, and continued many days without attending to the diarrhœa, or pains

in the abdomen produced by it. In many instances Dr. Gölis has seen the hydrocephalic symptoms suddenly vanish, and in inflammation of the intestines thus induced, which terminated in death. He informs us, that he has observed the same unfavourable accident, still more frequently from the incautious use of calomel in croup.

Calomel is efficacious only in the stages of turgescence, and of inflammation ; but for the two last periods of hydrocephalus it is useless. The only contra-indications which can forbid its employment are violent pains in the abdomen, an inflammatory state of the stomach and intestines, and a weakening diarrhœa ; but as Dr. Gölis, in the many hundred patients whom he has attended with acute hydrocephalus, says he has never seen inflammation of the abdomen,* violent pains, or diarrhœa, but has commonly observed constipation, so he never neglected to give this remedy, when recovery was not hopeless. Yet, should the above mentioned contra-indications occur, no practical physician would prescribe it under such circumstances.

Emollient medicines. — The author, in speaking of these remedies, says it is necessary to combine with them no ascescent matter, as he tells us it would come in dangerous collision with the calomel, would occasion its decomposition, and render it corrosive ; from which chemical process the most injurious consequences would follow. This, however, is not very correct chemistry, for we are unacquainted with any vegetable acid capable of producing any such effect. When it is an object to keep up perspiration over the whole surface of the body, these emollients should be given luke-warm. In those cases where the patients complain of violent head-ache, the gum arabic emulsion is far preferable to all others, as it procures a much quicker alleviation of the distressing pain. Tonic medicines, cautiously given, are only applicable when, by the free use of calomel, by other purgative and weakening medicines, or by large bleedings, the strength has been reduced far below the natural standard.

External remedies.—Local bleeding is much more applicable than general bleeding ; but as to the circumstances under which it is proper, there is considerable difference of opinion among

---

* The contradiction between what the author here asserts, and the above passage, where he alludes to fatal instances of inflammation of the intestines, is apparently direct. He means, however, to say, that he never witnessed the inflammation as a spontaneous affection, but only when it was produced by too large doses of calomel.

authors. According to the experience of Dr. Gölis, it is fruitless in the *water-stroke*, pernicious in chronic hydrocephalus, and efficacious and necessary in acute hydrocephalus, only at determinate periods, and under certain circumstances. It is proper, in the turgescence of acute hydrocephalus, not only in plethoric children of every age, but in less plethoric individuals, in whom the complaint has been preceded by a violent agitation of the brain, and when, from the general prevalence of other inflammatory diseases, bleeding is rendered particularly necessary. The description of the circumstances under which it is to be employed, will be given under the head of local inflammation.

Napkins, soaked in cold water, are to be laid over the head, and changed as soon as they cease to be cool; they are to be continued until all the symptoms, which indicate this stage of hydrocephalus, are arrested. At the same time lukewarm and stimulant pediluvia are good derivative remedies : mustard cataplasms to the soles of the feet, calves of the legs, or nape of the neck, which are suffered to remain only until the patient feels their action, are sometimes more manageable than pediluvia.

Dr. Gölis objects to the employment of general or partial warm baths, because they always increase the determination of blood to the head. Blisters do good at this period in phlegmatic, unplethoric children ; they are to be applied to the calves of the legs. If mercurial frictions are employed, not less than a drachm of the ointment should be used every three hours : this remedy may be joined with the internal use of calomel, and may be continued for twenty-four or thirty hours. Tartar emetic ointment may also be applied in the same situations, viz. the occiput, nape of the neck, and thighs : the diet should be sparing, and of an antiphlogistic nature ; and children at the breast must be allowed to suck less frequently than before.

Treatment of the acute hydrocephalus in the inflammatory stage.—At this period patients may also be saved : late interference and ignorance of the disease are the causes of the great fatality of acute hydrocephalus. If the consideration of the causes, the reigning character of other diseases, and the constitution of the patient, render it necessary to bleed, the proper quantity of blood must be taken as quickly as possible. General bleeding should be performed at the arm or foot ; local, at the nape of the neck, or behind the ears : on the abstraction of the proper quantity rests the patient's life. This is proved by the relation of two cases in which the bleeding was not employed at all, or not in sufficient quantity. In strong and plethoric children, in the first six months of life,

particularly after violent agitation of the brain, and in an inflammatory season, two, three, and occasionally four, ounces may be drawn; in those from six to twelve months old, three, four, and five ounces may be taken with great advantage; in the second, third, and fourth year, four, five, and six ounces are to be drawn, and to be repeated according to circumstances. The physician should always be present to determine the proper quantity, or the necessity of a repetition: repeated small bleedings are less efficient than one full one at the proper time. In cases of hydrocephalus, excited sympathetically, occurring symptomatically, or from metastasis, and in cachectic individuals, bleeding must be employed with the greatest caution. In the acute form, following contagious apthæ, chronic hydroephalus, or general glandular disease with hectic fever, and the form of disease produced by intense study, bleedings, if considerable, may be fatal. When general bleeding would be attended with great difficulty, many leeches may be applied to the temples, or behind the ears; especially as in quickness of action, this method is not much inferior to general bleeding. In some instances, after having opened a vein, it is necessary to apply leeches also. The author does not think it advisable to apply leeches to the entrance of the nostrils, according to the recommendation of Peter Frank. A repetition of the bleeding is especially necessary when the irregularity of the pulse which led to the first bleeding soon returns, and the other symptoms are aggravated. To determine the quantity of blood which should be drawn, it is necessary, in addition to the above-mentioned circumstances, to pay the strictest attention to the pulse, and the distressing pain in the head of which patients, by sighs and words, bitterly complain. As long as the former is irregular, and not very weak, and the characteristic pains in the head are vehement, the blood may be allowed to flow.

Internally antiphlogistic remedies and calomel must be carefully administered; the former should be given lukewarm, and at short intervals; the latter, as has been already said in the treatment of the first stage, must be persevered in until colicky pains occur, and green stools follow. But in this stage, even large doses of calomel will often be given during twenty-four hours, without producing any stool; and fourteen or more grains may be administered before this effect takes place. In such instances Dr. Gölis recommends an union of some grains of toasted jalap, and of clysters to assist the action of the calomel, which, it must be remembered, is not indicated after the present period of the disease. With emollient and antiphlogistic medicines, which are of great efficacy in the two first periods of this affection, gentle diuretics and sudorifics may be employed,

with great advantage, for the radical cure : the more patients will take of these remedies the more certain is their efficacy. Violently stimulating sudorifics and diuretics, which excite the circulation, are, of course, objectionable.

Of the use of digitalis.—Dr. Gölis is convinced that digitalis has not afforded the same great benefit in acute hydrocephalus as in acute hydrothorax after scarlet fever ; yet in the stages of turgescence and inflammation it is very efficacious after bleeding, and in conjunction with calomel and antiphlogistics, when, with diminished power, an increased sensibility of the nervous system prevails. When the morbid irritability of the blood-vessels will not yield to strengthening remedies, and the urine is not passed in sufficient quantities, it is also very useful by diminishing or quickly removing the former, and by greatly augmenting the secretion of the latter. An eighth of a grain of digitalis, with half a grain of calomel and ten grains of sugar, may be given every two hours, until the above described effect of calomel is produced. To little children digitalis can be given more easily in infusion than in powder, combined with emollient infusions and decoctions. The use of it, with antiphlogistics, can thus be uninterruptedly persevered in, whereas, if given with calomel, which has already produced the desired effect, it becomes necessary to desist from it for some time, or to administer it in another form. Besides, the powder hangs to the spoon with which it is stirred up in water, or it remains adhering to the mouth and lips, by which we lose a great part of this powerful medicine, which we are compelled to prescribe in minute quantities, and the whole of which should, therefore, be efficacious.

Digitalis renders much milder the violent convulsions which indicate the accession of the last stage, and it prepares a more gentle death than commonly takes place without it, or under the use of strong stimulants. Dr. Gölis found, that in the last stages of the disease this remedy neither rendered the pulse slower, intermitting, nor irregular : as it frequently happens that patients cannot swallow for one or more hours, it is necessary to give them a larger quantity when they can.

External Remedies.—Cold applications must still be applied to the head till the symptoms are removed, or the stage of effusion takes place. Our author, however, mentions that he has seen cold effusions, in scarlet fever, produce shivering, and afterwards the *water-stroke;** he therefore particularly recom-

---

* We ourselves also witnessed, in one instance, the fatal effects of the injudicious employment of the same remedy for the same disease: the patient, who was a girl of about fifteen years of age, became permanently chilled, and died in a short time from severe affection of the head.

mends that cold water should not be allowed to run down the
patient's back, as rigors may also be produced in hydrocepha-
lus. But, he adds, that the soporose and unconscious state,
which no other means can change, often vanish by the applica-
tion of this remedy: it is not however to be applied, except in
the stages of turgescence and inflammation. Instead of foot-
baths, mustard cataplasms should be applied to the soles of
the feet, and suffered to remain until the patients feel the irri-
tation: the giddiness, confusion, nausea, or vomiting produced
by sitting upright are thus avoided. Setons and issues are use-
less, because their action is so slow; if, however, physician is
fortunate enough to remove the hydrocephalic symptoms, they
serve to prevent a relapse; but frictions with tartar emetic oint-
ment are applicable for neither of the above purposes.

The period of time when blisters will not injuriously increase
the turgescence in the head is always after bleeding: there has
been much dispute as to the place where they should be ap-
plied. Writers would have avoided this, if they had first agreed
in what periods of the acute hydrocephalus they are to be
employed for the radical cure—in what, only as palliatives for
relieving the violence of the symptoms—and in what they are
wholly useless. In Dr. Gölis's opinion, the calf of the leg, the
thigh, and the upper arm, are the fittest places for these reme-
dies: when the danger is not pressing, he found it necessary
only to employ them to the first, but if the symptoms are very
vehement the latter situations are also to be blistered. They
should be kept discharging even during the convalescence, and
should be suffered gradually to heal only when the patients are
perfectly recovered.

Stimulating, strengthening remedies.—In the after-treatment
of the debility, which the former remedies have occasioned,
bark, valerian, arnica, camphor, musk, castor, deserve to be
preferred to the other remedies of this class; and in great morbid
irritability of the arterial system, digitalis, in combination with
one of the above medicines, operates most effectually. If here
is much muscular debility, the peruvian bark is to be preferred:
the decoction should be given in milk, in the proportion of one
of the former to three of the latter, and with the addition of sugar;
to the larger children equal parts of the two should be administered.
The quicker or slower effects of this excellent remedy must
determine on the dose, and the time of its continuance. If dimi-
nution of muscular power is attended by increased irritability of
the nerves, the bark should be given with valerian; and where
torpor or diarrhœa has commenced, it should be combined with
arnica boiled in whey. In the latter cases the root of the ar-

nica is better than the flowers ; but if the skin remains inactive, small doses of camphor are to be added. If the state which the valerian is intended to relieve is accompanied by slight twitching of the limbs, when the patient is at rest or asleep, the musk, in combination with valerian, is recommended.

Opium is not advisable ; hence, when diarrhœa is present, other means must be used to relieve this symptom. The most preferable wine is old genuine Tokay ; but Rhenish, Madeira, or Malaga, may also be employed.

When the symptoms of inflammation and effusion seem to be combined with each other, and when the patients from time to time express vehement pain in the head, the radical and not the palliative treatment is to be adopted ; the latter plan is advised only when all inflammatory symptoms have subsided. As some patients at the beginning of effusion may be saved by the antiphlogistic treatment, it should be employed until there is absolute certainty that effusion has happened, for by this means no risk will be incurred, and the life may be preserved.

Dr. Gölis concludes that the perforation of the cranium is useless ; though recommended by Hippocrates, Forestus, Severinus, and Le Cat, it is censured by Morgagni, Fabricius, Hildanus, and Flajani, who saw it produce death. But our author does not seem to have put this remedy to the test of experience.

Palliative treatment of the stage of effusion.—Attempts at the radical cure at this period are useless, aggravate the pitiable state of the sufferers, and are honourable neither to the heart nor the head of the practitioner who applies them. Dr. Gölis says, that gentle nervous medicines, and infusion of digitalis should be given, without force or compulsion, but in the mildest way to the patient, now in a hopeless state. Every thing should be avoided which can agitate the body of the patient or excite his sense of hearing. The blisters before applied should be healed, except those on the calves of the legs. The author has often watched the operation of large doses of calomel in this stage, and could perceive no other effect result than violent colicky pains, which otherwise seldom or never occur at the latter period of the disease. In smaller doses calomel may be given as an innocent mean of avoiding reproaches.

In the palliative treatment of the stage of paralysis the above plan might be continued, if it were not more humane to avoid tormenting the patients, who struggle with death, by pouring medicines down their throats to no purpose. Slight palliative remedies are not, however, improper when there occurs a return of consciousness, vision, speech, motion, and capability of

swallowing, as sometimes happens at the moment when the stage of effusion passes into paralysis.

After a short chapter on the prevention of the acute hydrocephalus, the author treats at some length on the state of the brain after death. He here takes an opportunity of blaming writers, for the general terms in which they speak in describing pathological dissections of hydrocephalic patients ; and, as in their statement of symptoms, for omitting to mention the stage of the disease which destroyed the patient. He appears evidently to mention the unravelling of the convolutions of the brain in chronic hydrocephalus, which has been particularly described by Drs. Gall and Spurzheim ; for he says, "I myself twice saw, in children who had died of chronic hydrocephalus, the brain converted into a sac of water." The other observations are directed principally to the consistence of the brain, the nature of the secreted fluid, and the state of the vessels of the brain, and of the sutures of the cranium at the different periods of the disease.

We regret that our limits do not permit us to satisfy, as well as to excite, the inquiries of our readers with regard to the contents of this and of the last part of the present work, which is devoted to the relation of 37 cases of the *water-stroke,* and acute hydrocephalus, and to the accounts of the dissections of such patients as died.

Art. IX. *Recueil de Mémoires de Chirurgie, par Le Baron D. J. Larrey, Chirurgien en Chef de l'Hôpital de la Garde Royale, l'un des Anciens Inspecteurs Généraux du Service de Santé Militaire, &c.* Paris, 1821, pp. 319.

No production from the pen of the experienced Larrey can be perused without considerable interest ; though at present placed under different circumstances from those which gave rise to his other instructive and highly interesting Memoirs, he appears still to retain the same activity of mind, the same attentive observation, and the same facility of expression as have at all times particularly distinguished him as a practitioner, and an author. Of so high an authority we conceive it our duty to notice every work ; more particularly as it is chiefly composed of the relation of cases and practical observations.

The object of the first of the Memoirs is to give a history of moxa, its mode of application, and the diseases in which it has

proved of greatest use. This remedy was first made generally known by the publication of three volumes of the author's Memoirs in 1812; the first of which contains a plate of the instrument employed in its application. Since that period, the fourth volume of the same work, published in 1817, and the article Moxa, in the "Dict. des Sciences Med." have, as M. le Baron Larrey asserts, extended the employment of it over all Europe. The author observes, that, during his campaigns in North America, Egypt, and Syria, he had opportunities of witnessing the truth of the assertions of travellers respecting the advantages derived from the use of this remedy in a variety of morbid affections, and consequently employed it in his own practice whenever it was possible. The happy and extraordinary results obtained in a number of desperate cases, have induced him to publish the present extended Memoir, with the hope of removing the "*fatal prejudices*," at present existing against it, and of introducing it into general use.

We now proceed to the examination of the Memoir, to ascertain whether the facts collected are likely to realize the hopes of its illustrious author. The cone or cylinder of moxa is composed of a quantity of cotton, rolled on a small portion of fine linen, stitched at the edge. It should be about an inch long, and of equal thickness; but its size varies according to circumstances. A porte-moxa is employed to fix it on the spot where it is to be applied. The metallic ring of this instrument is insulated from the skin by three small supports of ebony—a bad conductor of heat. The extremity of the cone being lighted, combustion is kept up by means of a blow-pipe. The combustion should not be urged, but proceeds slowly; before applying it, the spot chosen for its application is marked with ink, and the surrounding skin covered with linen, to guard it from sparks. The base of the cone is then placed on the skin, and its combustion kept up till it be consumed. To prevent inflammation and suppuration, liquor ammoniæ is immediately applied to the surface of the burnt part.

The properties of moxa differ from those of the metallic cautery in the degree of pain produced by its application: that produced by metallic cautery is very acute, and can scarcely be borne, while that of moxa is more moderate and gradual. It is even at first more like a pleasing sensation * than pain, and

---

* Though we have very frequently witnessed the application of moxa, under the personal direction of Baron Larrey, we do not recollect to have observed this curious fact.

though it is extremely severe latterly, the patient supports it well, as he knows from experience that it will cease immediately on the application of the ammonia. The former means also, as M. le Baron imagines, communicates to the parts, besides the mass of caloric, a very active volatile principle, which cottony substances furnish in their combustion. " The excitement and irritation resulting from the combination of these two products are propagated to the deepest parts, so as to re-establish the action of the weakened or paralysed nerves, or to arrest the progress of a morbid action established in any part." If the superficial effects alone of the moxa are required, it is suffered to burn without the use of the blow-pipe.

The number of moxas required varies according to the nature and duration of the disease. Several days should intervene between their application, otherwise they would produce insupportable pain, great inflammation and suppuration. Not more than one or two should be applied at once. " Damp weather is less favourable to their success than dry fine weather." To assist the effects of this remedy in many cases, its application must be preceded by that of cupping, dry or scarified. The author prefers that method in which the vacuum is produced by means of a combustible body, to that in which the glasses are evacuated by an exhausting syringe, as he thinks that the degree of heat may contribute to the "superficial inflammation" desired.*

A sketch is next given of the diseases in which moxa is indicated, and under each, the modifications to be observed in its use are pointed out. The organs of sensation are placed first, and to each of them a chapter is allotted. Next follows paralysis of the muscular system, organic diseases of the viscera rickets, sacro-coxalgia, and femoro-coxalgia. It would exceed our limits to follow each of these in detail; we shall therefore select the most striking parts, confining ourselves principally to the facts related.

Vision.—Commencing cataract and recent weakness, or paralysis of the optic nerves, are said to indicate the use of moxa especially. It should be applied to the course of nerves related to those of the eye. Facial -superior maxillary and frontal. " By this remedy, not only the progress of amaurosis has been arrested, but in some cases in which the blindness was complete, it has been removed." For many cases of this kind the author

---

* This is a point of Practical Surgery in which the French are very little advanced. The common mode of exhausting the glass, is to burn a portion of dry tow in it ; sometimes a few drops of alcohol are put on it.

refers to his " Memoires," and the abstract of one contained in the third volume is given. The subject was the son of an English corporal. The blindness had suddenly supervened after he had travelled bare-foot from Corunna to Valladolid, in a severe winter. No doubt was entertained of the existence of amaurosis, yet the irides retained their sensibility. The moxa was applied over the course of the facial nerve, behind the angle of the jaw, and camphor liniment applied to the head. At the second application of the moxa, the child perceived light; at the fourth, distinguished objects and colours; and at the seventh, the functions of vision were completely restored.

If with the amaurosis there be plethora, the employment of the moxa must be preceded by cupping or bleeding. " Leeches applied near the eye produce ecchymosis, which augments the internal asthenia, and the obstruction of the conjunctiva."

To make the number of the senses complete, the second chapter is entitled, " On Smelling ;" of this the author observes, " We have obtained no success from the use of moxa, in some cases of loss of this faculty ; and therefore, we believe the remedy is in this affection useless.

Chap. III.—On *Taste.*—" We must say the same of taste, for experience has taught us that moxa has no effect on this sense."

In the chapter on hearing, M. le Baron says he could relate a great number of cases of deafness produced by cold and other sedative causes, removed by the employment of moxa over the course of the facial nerve : one is related. A young trumpeter lost his voice and hearing from bathing in the Seine, while hot and perspiring abundantly. He could not hear the most acute sounds. At first he was treated as an impostor, but afterwards taken to the Hospital du Gros-Caillou. After the use of cupping to the back and sides of the neck, and between the shoulders, a series of moxas were placed on the track of the facial nerve. At the third application the patient heard acute sounds, and could articulate some words : at the seventh and ninth, the pronunciation was almost, and the hearing quite, perfect : after the thirteenth, he was sent to his regiment perfectly cured.—(For similar cases we are referred to the " Mémoires.")

Under " Paralytic affections of the Muscular System," Tic Douloureux is mentioned as a disease in which the moxa is indicated, and three cases are related to shew its good effects. This disease, the author thinks, consists of a chronic or inflammatory congestion of the neurilema surrounding the nerves of the part affected. " The remedy excites these organs, produces

a salutary derivation of the morbid principle, altering their tis-
sue, and re-establishes the course of the nervous fluid." In the
first case the affection was produced by the blow of a foil on the
cheek : it had resisted blisters, leeches, and liniments : six
moxas removed it completely and permanently. In the second,
the disease had existed for many years, and was so violent as to
keep one eye completely closed. The accessions were periodi-
cal. After the employment of nine moxas successively, the
patient returned home well. The third was complicated with
commencing hemiplegia. After cupping, &c. eleven moxas
were applied, and the disease disappeared.

Of the other forms of paralysis, cases are also related of a
most interesting nature. One of paraplegia which had existed
three years, with violent and almost permanent pain of the ex-
tremities, trembling, emaciation, insomnia, &c. was so far cured
by thirty-two moxas, that the patient walked without support.
The remedy had been applied two by two, beginning from the
tenth and eleventh dorsal vertebræ, the spinous processes of
which projected, and on which pressure produced pain. At the
first application all pain was removed, and at the second, spon-
taneous motion was restored. Every moxa produced in this
case contractions in the feet and legs, as strong as those re-
sulting from the galvanic influence applied to the nerves.

In hemiplegia of the face, moxa has been applied with great
advantage ; but to prevent ulceration, &c. the moxa must be
of less size. The first cases mentioned by the author are of
soldiers of the Imperial guard, who, from night-watches in the
damp during the first campaign of Prussia and Poland, had one
side of their faces paralyzed. Repeated moxas over the facial
nerve restored the action of the paralysed muscles. The next
case is, of a young lady of seventeen, of great accomplishments,
and otherwise very pretty, who had had hemiplegia of the left
side of the face from her infancy. The deformity produced by
this was extreme, and gave her a very disagreeable look, parti-
cularly when smiling. The moxa was applied over the facial
nerve. At the fourth application there was a sensible change,
and the amelioration was progressive till the seventeenth, when
the deformity was almost entirely removed.

Hemiplegia of the extremities, particularly if of long stand-
ing, is not so easily relieved : but by perseverance it may be
effected. A case of this kind is related. Paraplegia is said to
be treated with great success by moxa, if it be not of long stand-
ing, and complicated with retention of urine. A case of this
is also related, cured by nine moxas.

The author next proceeds to the organic diseases, in which he

has employed this remedy with success. Idiopathic epilepsy, dropsy of the ventricles, and chronic cephalalgia, are the first mentioned. The moxa should be applied round the basis of the skull, and especially on the union of the squamous suture with the lambdoidal. Cases of these kinds are related which were very severe, but all yielded to the employment of the remedy. That of epilepsy occurred in a young trumpeter, from a fall from his horse. He had suffered for two years, and two attacks daily came on. The cranium was deformed, so that his regimental cap did not fit him by half an inch. By the use of fifteen moxas, in ten months, he was well; and his cap not only fitted him, but was four or five lines too large. Previously, however, to the use of moxa, he had been bled from the jugular, cupped often, had taken calomel, &c.

The author thinks the use of moxa contra-indicated in mental diseases with excitement.

In a case of *asthma*, so violent as to threaten suffocation, cupping, and twelve moxas, restored the patient (a young woman) to health in eight months. The attacks had come on regularly for some years after menstruation, which was regular. The moxas, in this disease, should be placed in two lines at the side of the chest, over the attachment of pectorales maj. and serrati.

The next disease to which our attention is directed is phthisis pulmonalis. M. Le Baron states his intention of publishing a Memoir on the use of moxa in this terrible malady, and therefore confines himself at present to a short relation of seven cases, some of them desperate, all of which were relieved, four completely cured, by the employment of the remedy. Three of them afterwards, and just as they were nearly well, died of gastro-enteritis, and upon examination the cicatrices of the tubercles were discovered. This confirmed the prognosis of M. Laennec, who had been satisfied of the cicatrization of ulcers, which before the employment of the moxa existed in the lung.

Of chronic and organic diseases of the abdominal viscera, enlargement of the pylorus, inflammation of the liver, spleen, of the uterus, commencing cancer, are these in which M. Le Baron has employed moxa with advantage. In the first volume of the author's campaigns a case is related of the spontaneous cure of an hepatic abscess, by opening into the transverse colon. Another case is mentioned which occurred recently in the hospital, which was similarly treated.

Many authors, but more particularly Pouteau, have recommended the use of moxa in rickets. It may be employed at every period of the disease, but it is of more advantage in the

early stages; and Desault observed, that it succeeded better when the points were not suffered to suppurate. The author observes, that the researches which he has made respecting diseases of the spine, during a practice of thirty years, have convinced him of the truth of the principles of Pott, and have also made him acquainted with a sovereign remedy, in the repeated application of moxa. The following terms are recommended to be used according to the seat of what the author denominates phthisis of the bones: rachialgia, sacro-coxalgia, sternalgia, costalgia, scapulalagia, and femoro-coxalgia. After a concise history of the symptoms, eight cases are related at some length. The first is that of a general, in which many means had been tried in vain: thirteen moxas completed the cure, and the patient made several campaigns afterwards. The second occurred in a young lady of 25, and was complicated with phthisis pulmonalis and a tumour under the scapula, causing its elevation. Twenty moxas removed all these complaints. The third case is taken from the fourth volume of the author's " Campagnes": twenty-four moxas completed the cure.* The fourth case is of a tumour on the side of the vertebral column, and is related to prove the benefit of the mode of treatment proposed in the same work; it consists in making an oblique opening into the abscess with a straight knife heated white hot, and evacuating the contents by means of cupping-glasses. Another mode employed by Baron Larrey, when the pus passes under the cellular tissue and communicates with the cyst deeply, is to pass a seton through the part. This was done (after the use of nineteen moxas) in one case which is related, and in which the pus presented in the left groin. The patient was well enough in three months to walk a little; but from drinking he brought on a metastasis to the lungs and brain, which terminated fatally after a month. There was found a loss of substance of the second and third lumbar vertebræ of four centimetres; the remainder of them was in a state of union. The eighth is the case of a Swiss of the Garde Royale, who, in a fit of nostalgia, threw himself from the third story of his lodging, with the intention of breaking his leg, and consequently of being sent home. The right leg was fractured, and the first lumbar vertebra dislocated forwards. The paralysis was so complete that the patient felt no pain from the fracture. After twenty days, moxas were applied two by two, on the side of the vertebral

---

* Other cases of the same kind are related in the second volume of the " Campagnes," p. 396. seq.

column, to the number of eight. The sensibility and muscular power of the extremities was so far restored in eighteen months, "that the patient would have been able to walk, had it not been for the fracture." The leg was now amputated, and the stump did well. In two years and a half, the patient was quite well: a deep depression remained under the last dorsal vertebra. The author has mentioned two cases of this dislocation in his Campaigns and intimates his intention of publishing a particular Memoir on the subject.

By the term sacro-coxalgia the author designates the same affection occurring in the sacro-iliac symphysis, and sometimes producing a dislocation. It is generally caused by mechanical and external causes, but M. Le Baron has observed it in young females, after the birth of a large child; and, in a young woman of 17, he was obliged to apply a bandage from this cause. Local pain encreased on pressure and tumefaction, he considers a sufficient ground for diagnosis. In this the moxa is a valuable addition to the usual measures employed.

Femoro-coxalgia is the name given to " latent or chronic inflammation of the hip-joint." This, in adults, M. Le Baron considers the result of rheumatism, and saw it more particularly after the long and painful campaign of Russia. After the employment of cupping, setons, &c. the moxa is said to be productive of the greatest advantage. Professor Rust, of Berlin, made use of the actual cautery with great benefit, in this disease; and he found that in cases of lengthened extremities, the limb was restored to its proper length immediately after the application: Baron Larrey has observed the same fact, and explains it by supposing that the muscles, previously in a state of inactivity, are made to contract and fix the head of the bone in the acetabulum. The moxas should be applied one by one, or two by two. Eight cases are related in proof of the utility of the remedy, and as they are all nearly similar, we shall give an outline of one. The patient had been treated by issues to the trochanter, but without improvement. The limb was lengthened about two centimetres, abscesses existed below the cauterised point, there was great pain in this region, and all over the limb, slow continued fever, &c. Thirty-two moxas applied successively, produced the reabsorption of the matter of the abscess, cicatrization of the ulcerated parts took place, as was proved by the shortening of the limb, and except a little lameness, the patient walked as well as before the attack. M. Le Baron has also employed the moxa with advantage in what is called white swelling of the knee; but this will form the subject of a future and particular Memoir.

We are prevented by our limits from entering at length into the consideration of the advantages of moxa over other counter-irritants; we shall therefore merely state our opinion, deduced from the repeated observation of its employment, that there certainly are cases in which it is to be preferred to issues, setons, and blisters. The first instances are those in which the torpidity and want of susceptibility of constitution, require some means more active than those which are sufficient in the generality of cases. The others are those in which the remote situation of the disease renders less active means sometimes inefficient. We particularly allude to diseases of the vertebral column and the hip-joint, in both of which, the greatest success seemed in our opinion to attend the use of this remedy. Muscular paralysis must be also included in affections indicating its employment. We beg leave to refer to a case related by Roux, in his account of his visit to London, the circumstances of which we know to be correct.

With regard to the pain produced by the moxa, which in this country appears to constitute the chief objection to it, we may observe, that we think it as much overrated in England, as it is underrated on the Continent. We have already noticed M. Le Baron's assertion, that the sensation is at first rather pleasing; he also says, that it is much less painful than that of an issue. Of this no one can be a judge, unless he has felt or tried both. We recollect being struck by an ironical remark of M. Dupuytren to a patient, on whom he was about to apply the moxa for a disease of the hip-joint. "Nous allons vous chatouiller un peu." While we should be disposed to regret the entire neglect of this remedy by English practitioners, we would deprecate at the same time, its universal and indiscriminate use under every circumstance, and in patients of all constitutions, as is done by continental surgeons.

Of the other Memoirs contained in the present volume, we shall hereafter give an account of such as have not already been noticed in our Journal.

ANALECTA.

1. *New Method of treating Sarcocele, without having recourse to Extirpation of the Testicle.*

M. Maunoir, of Geneva, has recently published a Memoir, entitled "Nouvelle Methode de traiter le Sarcocèle sans avoir recours a l'Extirpation du Testicule," pp. 27. 8vo., in which he proposes to tie the spermatic arteries, with a view to diminish the bulk of diseased testicles by determining the blood distributed to them into other channels. For this purpose, he makes an incision opposite the abdominal ring, to expose the spermatic chord, and to come as near as possible to the principal trunk of the spermatic artery, so as to tie it sufficiently high to interrupt the circulation of the blood through all the small branches which it sends off. We are recommended not only to avoid tying the Vas deferens, but also the spermatic veins. But before any operation is commenced, M. Maunoir says, "that it is essential to be able to determine whether the disease is a true sarcocele, or a medullary fungus of the testicle, or of the spermatic chord—affections of greater importance than sarcocele, with which they have but too often been confounded. In sarcocele the tumour is generally more uniform, and more firm; its volume does not exceed twice or thrice that of the healthy testicle; the spermatic chord remains unaffected. In the medullary fungus of the testicle, the organ usually acquires a more considerable size; the body of the testicle and the epididymis becomes soft, and affords a deceptive sensation of fluctuation, which has sometimes caused the case to be mistaken for hydrocele. If the disease is far advanced, the scrotum changes colour, becomes livid, and at length ulcerates. When this happens, the chord commonly participates in the tumefaction, and in the deceptive fluctuation above mentioned. The swelling of the chord continues even up to the abdominal ring, and the abdomen cannot be pressed without causing great pain in the loins." Two cases are mentioned by M. Maunoir, in which he put in practice the new proposal. The following is the most striking:—A man, thirty-five years of age, without any assignable cause, was attacked with pain in the left testicle, which was continued along the spermatic chord, and extended to the lumbar region. A remarkable swelling also affected the testicle, and there was a deposition of fluid in the tunica vaginalis which was punctured. The accumulation again quickly recurred, and was evacuated twelve times successively; the testicle at the same time acquired so considerable a size, that its extirpation, which had become necessary, appeared likely to be attended with danger. M. Maunoir, on the 8th of June, 1820, tied the spermatic artery, and divided it below the ligature. On the 4th of July, the diminution of the tumour was evident. He quitted the hospital on the 20th of August, when his testicle was perfectly without pain, and not larger than the opposite one. The pain was removed by the ligature as by enchantment, and the radical cure of the hydrocele, at the same time, took place. Although we are of opinion that the proposal displays considerable ingenuity, and may certainly be applicable in some instances; as there are many kinds of swellings of the testicle, it might not in some be so prudent as the complete removal of the whole disease.

2. *On the Manufacture of Surgical Instruments from Wootz.*

THE substance called Wootz is a kind of steel manufactured at Bombay, and in high estimation among the Indians: it admits of a harder temper than other kinds of steel; it is employed by the natives for constructing that part of gun-locks which strikes the flint, and for every other purpose where excessive hardness is necessary. But it cannot bear more than a red heat, which makes it work very tediously, for which reason the manufacturing of wootz is a separate art from that of forging iron : the magnetical power also can be communicated to it only in an imperfect degree. It is a carbonet of iron containing less carbon than common cast iron, and more than steel.

Wootz has lately attracted the attention of Dr. C. F. Gräfe, who has made several trials with it to ascertain how far it is calculated for the construction of surgical instruments. He considered that as the hardest materials furnish the sharpest instruments, and as wootz is distinguished by its superiority in this respect, it would be very likely to succeed. He accordingly procured from England a small quantity of wootz, and put it into the hands of an ingenious instrument maker, for the purpose of having some lancets, bistouries, knives for cataract, and couching needles made of it. Their manufacture was attended with difficulty, yet, from the pains taken by the instrument maker, the instruments turned out very well, and received an extremely beautiful polish. Dr. Gräfe has operated many times with them, has compared them with instruments made of common steel, and has found that they were sharper, and retained their edge longer, than the others; and he expresses his satisfaction with the cataract-knives and couching-needles which were also made. At the same time he invites other surgeons to make trials of these instruments, and to publish their results.

We are informed that Mr. Stodart has lately presented a complete set of amputating instruments to the College of Surgeons, which are manufactured from wootz, possess an extremely high polish, and appear to be very well made. It would, in our opinion, be a very desirable object to possess a less brittle material than common steel for the manufacture of instruments, and particularly for the knives used for lithotomy, which are called after their proposer, Mr. Thomas Blizard. We may mention, that in two instances we have witnessed the breaking of these instruments during their passage through the prostate gland into the bladder; and that the extraction of the fragments was attended with considerable inconvenience to the operator.—(For Gräfe's account of the above instruments, see the Journal der Chirurgie und Augenheilkunde von C. Gräfe, und Ph. von Walther. 3 es. stück.)

3. *Survey of, and Remarks on, Fifty Operations for Hernia. By Dr. Massalien, of Heunhuth.*

THESE fifty cases came under the observation of Dr. Massalien, during a practice of thirty years previously to the year 1810. Of these cases there were—

29 in Males and............................	21 in Females.
Of which there were 25 inguinal and 4 femoral.	Of which there were 5 inguinal, and 16 femoral.
11 Men and........	9 Women died.
19 inguinal and 3 femoral were on the right side; 5 inguinal and 1 femoral on the left.	5 inguinal were on the right side; 9 femoral on the right, and 7 on the left.

On two men the operation was performed in adherent Entero Epiplocele, without strangulation, since the reduction and the application of a proper bandage were impossible; the frequent colicky pains rendered the occurrence of strangulation probable; one of these was a scrotal, the other a femoral hernia, both on the right side, and in both the portion of omentum was separated from its adhe-

sions, and removed. They both recovered quickly, and wore light trusses, to avoid a relapse. The remaining forty-eight were all strangulated, some for eight days, and one for ten, before Dr. Massalien was called; and to this it was owing that twenty perished after the operation. To the objection (if such could be made) that he should not have operated at so late a period, Dr. Massalien answers by mentioning one case on the ninth day, two on the sixth, and seven on the fifth, day of strangulation, in which the operation was performed with success. In one female on whom the operation was performed, the ninth day, a portion of the intestine was in a state of gangrene, and for a long time there was a discharge of fæces through the wound, but this ceased entirely after three months. In two other females, after a strangulation of five days, and in a man after one of four days, a discharge of fæces existed for four, eight, and eighteen days after the operation; but these patients also were perfectly well in four weeks. Five operations on the fourth day of strangulation, ten on the third, and three on the second were successful. Dr. Massalien observed that he was seldom called early enough, and the patients would then seldom submit soon enough to the operation. In one case of congenital hernia with " double strangulation," which had existed for twenty hours, and in which there was also a hydrocele, the man died. When the stricture of the abdominal ring had been removed by the incision, it was necessary to open the tunica vaginalis testis, as a portion of intestine was so closely strangulated by it as to prevent the escape of even a drop of water, though the latter amounted in quantity to a pint. This portion of intestine was in a state of sphacelas, and the upper portion was violently inflamed. The inflammation extended to the abdomen, and caused the patient's death. Three patients, on whom the operation had been performed after a strangulation of two days, and one after twelve hours. in which it was not necessary to enlarge the abdominal ring, died. The second died five days, and the third not till fifteen days, after the operation; but of the cause of death Dr. Massalien could give no account, as the great distance prevented his seeing the patients after the operation. After such results, Dr. Massalien says, that he operates in every case where the patient is not in articulo mortis; but is, even in the best appearances, extremely cautious in giving a prognosis. One of the females was in her sixth month of pregnancy. The hernia, which was a right inguinal, had been strangulated more than two days. The patient did well, went her full time, and had an easy labour. Four of the cases were congenital herniæ : two of them died. Twenty-one were Entero-Epiploceles, and in seventeen of these it was necessary to remove a portion of omentum, in some because it was gangrenous, in others because it could not be returned. Dr. Massalien thinks that the slightly sensible and delicate omentum diminishes very much the effects of the pressure of strangulation on the intestine ; for of the entero-epiploceles there died only five in twenty-one ; but of the simple enteroceles, fifteen in twenty-nine died. One female was attacked with trismus nine days after the operation, of which she died on the thirteenth day. Of this Dr. Massalein thinks the irritation of worms, and the access of cold air to the wound, were the causes; for she had previously passed worms by stool, and in a cold night the bandage came off. In most of these operations, it was necessary to divide the abdominal ring and poupart's ligament. Where this was not necessary, the dilitation was accomplished with the finger better than with " Arnaud's hook, improved by Richter." The latter, however, Dr. Massalein found usesul in two cases. The incision was always directed towards the symphysis pubis, and Dr. Massalein says, he was always " fortunate enough to avoid the epigastric artery," except in one man ; and in this case (which was evidently from his account, Ventro Inguinal Hernia,) he candidly reproaches himself with having made the incision too near the outer angle of the ring. The patient died after some hours, from the wound of the artery not being discovered to exist. The hæmorrhage, at the commencement, appeared to have ceased, but actually was taking place into

the abdomen. Twice Dr. Massalein had the misfortune to wound the intestine with the knife. In both instances the aperture was closed by suture; in one it healed completely without any escape of fæces; in the other the patient died, but not apparently from this cause alone, for the operation had been performed too late.—(*Zeitschrift für Natur und Heilkunde, Dresden.* 1 en. B des. 2 es. Hft.)

4. Cases of remarkable Dislocation of the Patella, communicated by Mr. L. Wheeler.*

THE dislocation of the patella, inwards and outwards, frequently takes place, and particularly in the latter direction, on account of the external condyle being less prominent than the internal; the following are, however, examples of a curious and more uncommon dislocation of this bone :—

Sept. 18th, 1821.—A coal-heaver fell down so as to allow both the fore and hinder wheels of an empty coal-waggon to pass over his right knee, in a direction from the inner to the outer side of the joint. He was immediately brought to St. Bartholomew's Hospital. The patella rested perpendicularly on its internal edge, and its external edge was inclined directly forwards; so that its upper surface was turned inwards, and its under or articular surface outwards; in the same way as the extended hand might rest on its ulnar edge, instead of its palm. I speak of the horizontal position of the body. The bone was placed so nearly in a perpendicular direction, that it was not easy at first to ascertain which was its upper, and which its under or articular surface, but this was distinguished by comparison with the superior surface of the opposite patella. The insertion of the vastus externus into the external edge was the only tendinous attachment which was much stretched. I reduced the dislocation suddenly, but with some difficulty, by bending the thigh very much on the pelvis, drawing downwards the flexor muscles as much as possible, and by forcibly raising the bone at the same time that I turned it in its natural direction. Some inflammation in the joint followed, but was arrested by the usual means.

The following case related by M. Combette, will be found in the Journal Générale de Medecine for May, 1821 :—M. C., thirty years old, dislocated his patella in wrestling by a motion which he could not describe. There was a projection at the knee, the leg was permanently extended. The patella rested completely on its edge, its articular surface being turned outwards. The internal half of its circumference was fixed in the articular groove formed by the elevation of the sides of the anterior part of the condyles of the femur.

Reduction.—An assistant raised the thigh, and with one hand M. Combette bent the leg on the thigh, while, with the other, he turned the patella from within outwards. The reduction was effected in an instant, and was followed by slight swelling and weakness. Six months afterwards, in dancing, the same accident happened in a less complete degree; for the patient was able to replace the bone himself. The joint is perfectly well formed.—Another example, of the same kind of dislocation of the patella, is also related in the 64th volume of the Journal Général de Medicine, p. 79.

5. On the Effects of Vegetable Food by B. Gaspard, M.D. (Journal de Physiologie Experimentale de M. Majendie. Juillet. 1821.)

THE constant rains of 1816 having either destroyed or prevented the ripening of all the grain in the departments of the Ain, the Jura, the Doubs, Haute-Saone, the Vosges, and a part of Saone-et-Loire, the consequence was a dreadful famine

---

* For permission to relate the first case, I am indebted to the kindness of Mr. Stanley, assistant-surgeon to St. Bartholomew's Hospital.

during the first six months of the year 1817. The unfortunate inhabitants struggled against their wants during the months of January, February, and March, by living on potatoes, oaten bread, the siftings of flour, or even bran, with other bad kinds of food, and by begging. But at last all their resources being exhausted, and food of every kind having reached an unheard-of price, during the months of April, May, and June, the meadows and fields might be seen covered with unfortunate beings, who, as it were, disputed the pasture with the cattle. Hunger, at this time, reduced them to live on herbaceous vegetables, principally goat's-beard, wild sorrel, nettles, chicory, thistles, the tops of beans, the bark of young trees, &c. &c. Many of these wretched beings satisfied the calls of hunger by eating snails, of which they destroyed an incredible quantity in the mountains. Dr. Guillamod observed in those who ate them to excess, a state of stupor and narcotism similar in some degree to the effects of belladonna.

This unaccustomed kind of food was ill adapted to support the human frame; the consequence of a strictly herbaceous diet, so long continued, was a general serous diathesis, an universal dropsy or anasarca, without ascites, jaundice, or affection of the abdominal viscera. The author was assured by many women, that the catamenia ceased during the use of herbs. From the examination also of the registers of births in some of the communes, which suffered much by famine, he has convinced himself that the number of conceptions or fecundations was less by one half in the three months of that year, than in the same three months of the years which preceded or followed it. During this period there were no prevailing diseases, and the number of sick in the whole year was small.

6. *Protrusion of the Tentorium Cerebelli.*

The following case is given by M. Lallemand, surgeon-in-chief to the Salpetriere. Marguerite Recorda, aged twenty-three, applied to me for a slight ophthalmy. She was an idiot from childhood, and had on the occiput a tumour, which had increased from the size of the nut to that of an egg; it was moveable, indolent, and presented all the characters of an encysted tumour. I decided on removing it, and having made an incision round the base, proceeded to the dissection; but I was soon struck by a bright shining white colour, which I perceived at several parts of the base and which I thought resembled that of the dura mater. I mentioned my doubts to the pupils present, and passing my finger into the wound, assured myself that the base of the tumour was fixed in an osseous circle, formed by the occipital bone. I discontinued the operation, and declared the serious effects I expected to follow. The patient suffered nothing on the day of the operation. On the following day pulse hard, head-ache, prostration (bleeding from the arm). Vomiting of green bile occurred, and continued to increase, in spite of antispasmodics, &c. till her death, which happened on the eighth day after the operation. On examination, the part of the dura mater, forming the back portion of the tentorium, was found protruding through a circular opening in the occipital bone, three lines in diameter. It contained a prolongation of the two lobes of the cerebellum, of the size of a nut. Several suppurated points were met with in the substance of this organ.

7. *Hernia of the Uterus.*

The same gentleman has likewise related the dissection of a hernia of the uterus. The organ, with all its appendages, had escaped from the cavity of the abdomen, through the opening of the crural arch, and had descended to the middle of the right thigh. The vagina was so much elongated, that its connection with the cervix of the uterus was three fingers breadth below the bend of the groin. M. Lallemand has had copies taken in colours, plaister and wax (which are deposited in the Museum of the Faculty of Medicine,), of this original preparation of a disease, of which we possess but a few unimportant notices.—(*Annuaire Medico-Chirurgicale des Hopitaux de Paris,* 1819.)

Medico-Chirurgical Society of Edinburgh.

It is with pleasure that we announce the formation of a Medico-Chirurgical Society in Edinburgh. The Society is formed upon the model of the Medico-Chirurgical Society of London, and has in view precisely similar objects. Most of the Medical Professors in the University, and many of the most respectable Practitioners in the City, have co-operated in its formation. Dr. Duncan, sen. has been elected its first President; its sittings commence in the approaching Winter Session.

In addition to ordinary and Honorary Members, provision is made for the admission of Corresponding Members; and it is hoped that many, in almost every part of the world, and such especially as retain a grateful recollection of the advantages they derived from their Alma Mater, will not be backward in supporting interesting Communications.

Communications may be transmitted to the President of the Society, or to either of the Secretaries, according to the following addresses :—Dr. W. P. Alison, No. 44, Heriot-row, Edinburgh; Dr. Robert Hamilton, No. 3, Northumberland-street, Edinburgh.

QUARTERLY LIST OF NEW PUBLICATIONS.

ANATOMY AND PHYSIOLOGY.

Béclard et Cloquet. Anatomie de L'Homme ou Description & Figures Lithographiées de toutes les parties du corps Humain. Paris. 1821. Fol.

BOTANY.

Vollständige Sammlung officiueller Pflanzen : herausg. u. verlegt von der Lithographischen Anstalt Arnz u. Comp. 1821.

CHEMISTRY, MATERIA MEDICA, AND PHARMACY.

Pharmacopœia Rossica, seu Codex Medicamentarius Europæus, Pharmacopæiam Rossicam Fennicam & Polonicam continens. Lipsiæ. 1821.

MEDICINE AND SURGERY.

A. Scarpa. Abhandlung über die Unterbindung der bedeutenden Schlagadern des Gliedmassen, mit einem Anhang zu dem Werk über die Schlagader-Geschwulst. Aus d. Ital. übers. von F. Parot. Berlin, 1821.

Ph. Pinel von den Blutflussen, dem Blutspeien und Blutbrechen. Aus d. Franz. übers. u. mit Anmeckungen begleitet. v. Renard u. Wittmann. Leipzig.

Magazin der ausländischen Literatur der gesammten Heilkunde u. Arbeiten des ärztlichen vereins zu Hamburg. Herdusg. v. Dr. G. H. Gerson u. Dr. N. H. Julius.

J. Ritter v. Vering. Ueber die Heilart der Lustseuche durch Quecksilber-Einreibungen. Wien, 1821. 8vo.

C. G. Mayer. De Polypis Uteri commentatio med-chirurgica. Cum Tab. aen. Wien, 1821. 4to.

Kopp. Beobachtungen im Gebieth des ausübenden Heilkunde. Frankf. 1821. 8vo.

Analisi della nuova Dottrina Italiana. Modena, 1820. 8vo.

Palletta. Exercitationes Pathologicæ. Mediol, 1820. 4to.

S. Cooper's Neuestes Handbuch des Chirugie. Aus. Eng. ubers. v. Dr. C. F. Froriep (5te Lieferung.) Weimar.

Troisfèvre. Division naturelle des tempéramens. Paris, 1821.

Berard. Doctrine Médicale de l'Ecole de Montpelier. Tom. 1. 8vo. Paris, 1821.

Charmel. Recherches sur les métastases. Paris, 1821.

MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

Siebold. Lehrbuch des Theor. Praktischen Entbindungskunde. 2r. Band. 3te Ausg. 1821. 8vo.

NATURAL HISTORY.

J. Knolz. Naturhistorische Abhandlung über die Blutegel u. ihren medicinischen gebrauch. 8vo. m. 2. taf. Wien.

Gasparin Des Maladies Contagieuses des bêtes a laine. Paris. 1821.

INDEX

TO

THE THIRD VOLUME

OF THE

QUARTERLY JOURNAL OF FOREIGN MEDICINE AND SURGERY.

A.

I.

List of Subscribers

TO

THE QUARTERLY JOURNAL

OF

FOREIGN MEDICINE AND SURGERY.

The Royal College of Physicians, London
The Royal College of Surgeons, London
The Medical and Chirurgical Society, London
The Hunterian Society, London
The Medical and Philosophical Society of St. Bartholomew's
     Hospital
The Library of the London Hospital
The Manchester Infirmary Library
The Manchester Medical Society
The Manchester Medico Chirurgical Society
The Edinburgh University Library
The Royal Medical Society of Edinburgh
The Edinburgh Medical and Chirurgical Society
The Geological Society of Cornwall
The Norwich Medical Book Society
The Newry Reading Society
The Richmond Surgical Hospital Library
The House of Industry Library, Dublin
The Glasgow Medical Faculty Library
The Gibraltar Medical Society
The Devon and Exeter Hospital Library
The Wimborne Medical Book Society
Upham's Medical and Philosophical Library, Bath
The Birmingham Medical Book Society
The Exeter Medical Book Society
The Dublin Library Society
The Chatham Medical Book Society
The Transylvania University, State of Kentucky, N. America
The Medical Society of Liverpool
The Medical Book Society, associated in the Old Jewry
The London Medical Society, Bolt-court, Fleet-street
The Cork Institution

LIST OF SUBSCRIBERS.

Abernethy, John, Esq. F.R.S. Surgeon to St. Bartholomew's
       Hospital, and Lecturer on Anatomy and Surgery
Abercrombie, J. M.D. Edinburgh
Addison, Thomas, M.D. Hatton-garden
Ashburner, John, M.D. M.R.I.A.
Abel, Clarke, M.D. Pavilion Parade, Brighton
Allan, Robert, Esq. Lecturer on Surgery, &c. &c. Edinburgh
Armiger, T. G. Esq. Surgeon to the Eastern Dispensary
Archer, Dr. Dublin
Ashwell, ——, Esq. Guy's Hospital
Adams, Sir William, Albemarle-street
Armstrong, John, M.D. Physician to the Fever Institution
Andrews, I. G. Esq. Surgeon to the London Hospital, St. He-
       len's-place
Arnott, James, M. Esq. Golden-square
Attree, William, Esq. Brighton
Ager, Joseph, M.D. Lecturer on the Practice of Physic and
       Materia Medica, Margaret-street, Cavendish-square
Albers, J. A. M.D. Bremen
Assalini Paolo, M.D. Professor of Surgery, &c. Milan
Armstrong, P. L. Esq. Copenhagen
Arrowsmith, James, Esq. Manchester
Anderson, Dr., New York
Baillie, Matthew, M.D. F.R.S. Physician Extraordinary to the
       King, Grosvenor-street
Babington, William, M.D. F.R.S. Aldermanbury
Barnett, John, Esq. Charterhouse-square
Billing, Archibald, M.B. Lecturer on the Materia Medica at
       the London Hospital, Bedford-place
Blizard, Sir William
Blixard, Thomas, Esq. F.R.S.
Bell, Thomas, Esq. Lecturer on the Diseases of the Teeth, &c.
       Guy's Hospital, Bucklersbury
Blundell, H. Esq. Chiswell-street
Biddell, John, Esq. Apothecary to the Middlesex Hospital
Buchanan, C. Esq. City-road
Brabant, I. H. Esq. Devizes
Blundell, Dr. Guy's Hospital
Bell, Charles, Esq. F.R.S.E. Sugeon to the Middlesex Hospi-
       tal, and Lecturer on Anatomy and Surgery, &c. Soho-
       square
Bullman, Dr. Newcastle
Bally, Archibald, Esq. Baldock, Herts
Brown, ——, Esq. Linton, N.B.
Barton, Samuel, Esq. Manchester

Barlow, Dr. Physician to the Bath Infirmary, &c. Bath
Butler, ———, Esq. Romford, Essex
Breschet, Gilbert, M.D. Paris
Berzilius, Jacob, M.D. F.R.S. Professor of Chemistry in the
   University of Stockholm
Blumenbach, J. F. M.D. F.R.S. Professor of Medicine in the
   University of Gottingen
Brown, John, M.D. Edinburgh
Baron, John, M.D. Physician to the Infirmary at Gloucester
Benwell, Henry, Esq. Greenwich
Belden, J. H. Esq. Bermuda
Blick, Robert, Esq. 12, Northampton-square
Booth, James, Esq. Halifax
Bull, C.M.D. Cork
Bullen, William, M.D. Cork
Cooper, Sir Astley Paston, Bart. F.R.S. Surgeon to Guy's Hos-
   pital, and Lecturer on Anatomy and Surgery, Spring-
   gardens
Conquest, J. T. M.D. F.L.S. Physician Accoucheur to the City
   of London Lying-in Hospital, City-road, Lecturer on
   Midwifery, &c. Aldermanbury Postern
Crawford, William, Esq. Port Glasgow
Carnegie, John, M.D. Wimbourne, Dorsetshire
Complyn, Edward, Esq. Bishopsgate-street
Cross, John, Esq. Norwich
Caponi, Marquis de, Florence
Campbell, J. S. Esq. Tobago
Copland, James, M.D. 2, Terrace, Walworth
Cornegliano, Dr. Pavia
Colquhoun, Dr. Aberdeen
Clark, D. M.D. Edinburgh
Clark, James, M.D. Rome
Clark, J. C. M.D Smyrna
Cole, Richard, Esq. Great Coram-street
Coombs, ——— Esq. Bath
Chichester, Ur. Bath
Crawford, Stewart, M.D. Bath
Cottingham, Edwin, Esq. Great Queen-street
Cooke, John, M.D. F.A.S. Gower-street, Bedford-square
Cogswell, J. G. Esq. Boston, United States
Channing, Walter, M.D. Boston, United States
Curtis, John Harrison, Esq. Aurist to the King, &c. Soho-sq.
Crampton, Dr. Dublin
Clarke, James, M.D. Dublin
Colles, Abraham, M.D. Dublin

Carter, Thomas, A.B. Dublin
Capel, —— Esq. 32, Russell-square
Cullen, William, M.D. St. Bartholomew's Hospital
Cooper, Samuel, Esq. South Crescent, Bedford-square
Cork Institution
Cronin, Dr. Kilfinane
Cronin, Jun. Esq. Cove of Cork
Coulter, Thomas, A.B. Dublin
Cunningham, H. M.D. Ireland
Christie, Robert, Esq. East India Company's Service
Croome, R. Esq. Banbury, Oxon
Christison, Dr. Edinburgh
Davis, David D. M.D., Physician to the Duchess of Kent, Lecturer on Midwifery, &c., George-street, Hanover-sq.
Duncan, Andrew, Jun. M.D. F.R.S.E. Professor of Materia Medica in the University of Edinburgh
Dickson, D. J. H. M.D. F.R.S.E. and L.S. Physician to the Fleet, Clifton
De Lion, Dr. Steward-street, Spitalfields
Davy, — Esq. Soho-square
Davidson, Alexander, Esq.
Douglas, Henry, M.D. Dublin
Dawson, Charles. A.B. Dublin
Davidson, J. H. M.D. Edinburgh
Dangerfield, George, Esq. Tewkesbury
Dunn, David, Esq. Holloway
Edwards, Dr. Paris
Everett, Professor, Boston, United States
Erek, Alexander, A.B. Dublin
Edwards, George, Esq. Broad-street-buildings
Elliot, John, Esq.
Evans, Herbert, Esq. St. Bartholomew's Hospital
Evans, — Esq. Belper, near Derby.
Farre, John Richard, M.D. Physician to the London Infirmary for Diseases of the Eyes, Charterhouse-square.
Frampton, Algernon, M.D. Physician to the London Hospital, New Broad-street
Frampton, H. T. Esq.
Fernandez, P. Esq. Lamb's Conduit-street
Fox, — Esq. Huntington
Falkner, R. Esq. Bath
Forbes, Dr. Argyle-street
Forbes, Dr. Deputy Inspector of Military Hospitals, Chatham
Freckleton, George, Esq. Manchester
Francis, H. D. Esq. Birmingham

Knight, J. C. Esq. Finsbury-place

Kaufmann, G. H. M.D. Hanover

Keenbyside, —— Esq. Newcastle-upon-Tyne

Kerr, Alexander, Esq.

Laird, James, M.D. Physician to Guy's Hospital, &c. Blooms-
bury-place

Leach, Willaim, Ilford, M.D. F.R.S. and F.L.S. Curator of
Zoology to the British Museum, Canterbury-place,
Lambeth

Langenbeck, Professor, Gottingen

Langstaff. George, Esq. New Basinghall-street

Lebesgue, M. Esq. 8, Cleveland-street

Liston, Robert, Esq. Lecturer on Anatomy and Surgery, Edin-
burgh

Lush, Thomas, Esq. Guy's Hospital

Lothian, Peter, Esq

Lamb, —— Esq. Hatton-garden.

Lloyd, E. A. Esq. Falcon-square, Senior Surgeon to the Alders-
gate General Dispensary

Laughlin, Dr. Dublin

La Forest, John, Esq. 37, Red Lion-square

Lendrich, Charles, M.D. Dublin

Lee, Dr. Mellbourne-house, Whitehall

Le Bat, Dr. Dublin

Ledsam, John, Esq. Birmingham

Ledsam, J. J. Esq. Birmingham.

Macartney, James, M.D. F.R.S. M.R.I.A. Professor of Ana-
tomy, Trinity College, Dublin

Mann, George, Esq. Surgeon, 93d Regiment, Cork

Miles, —— Esq. Throgmorton-street

Moscrop, —— Esq.

Murdoch, Dr. Edinburgh

Murray, John, M.D.

Maclagan, Dr. Edinburgh

Monteath, G. C. M.D. one of the Senior Surgeons to the Glas-
gow Royal Infirmary, Glasgow

Mac Kenzie, William, Esq. Andersonian Institution, Glasgow

Macdowall, —— Esq. Dublin

Macklin, —— Esq. Dublin

Musgrave, Dr. Antigua

Mac Intyre, William, Esq. Hanover-square

Martindale, J. Esq. Apothecary to the London Hospital

Masfen, John, Esq. Stafford

Macgrigor, Patrick, Esq. Senior Surgeon to the Lock Hospital,
Golden-square

Macgregor, Sir James, M.D. Inspector of Hospitals to the
   Forces, &c.
Maclean, S. Esq. Dublin
Merriman, John, Esq. Kensington-square
Macilwain, George, Esq. Surgeon to the Finsbury Dispensary,
   Ely-place
Maclean, Charles, M.D.
Macgowan, Edward, M.D. Paris
Mac Whirter, Dr. Calcutta
Mack, the Rev. John, Serampore
Morgan, Dr. Dublin
Morgan, —— Esq. 13, Greville-street, Hatton-garden
Moore, C. W. Esq. St. Bartholomew's Hospital
Moore, James, M.D. Great Queen-street
Murphy, William, Esq. Cork
Newnham, William, Esq. Farnham, Kent
Nason, William, M.D. Dublin
Nasmyth, Robert, Esq. Edinburgh
Newbigging, William, Esq. Edinburgh.
Napper, J. Esq. Paris
Norton, Robert, Esq. St. Bartholomew's Hospital
Outhwaite, Dr. Manchester
Orpen, Dr. Dublin
Owen, Edward, Esq. Carnarvon
Oldknow, —— Esq. Nottingham
Pett, Dr. Clapton, Hackney
Palmer, Shirley, M.D. Tamworth, Staffordshire
Parkinson, James, Esq. Hoxton-square
Parsons, Thomas, Esq. Launceston, Cornwall
Plowman, William, Esq. Portman-steeet, Portman-square.
Paget, —— Esq.
Pitt, Dr.
Percival, Dr. Bath
Percival, Robert, M.D. Dublin
Price, William, M.D. Philadelphia
Porter, Henry, Esq. Grosvenor-square
Palmer, John, Esq.
Pierce, Dr. St. Mary Axe
Pearson, John, Esq. Surgeon to the Lock Hospital, Golden-sq.
Parker, Henry John Noel, Esq. Romsey, Hants
Quaine, —— Esq. Bath
Robinson, Benjamin, M. D. Physician to the London Hospital,
   Finsbury-place
Russell, Professor James, M.D. Edinburgh
Robinson, William, Esq. Boston, Lincolnshire

Reid, Dr. Dublin
Roe, T. E. Esq. Bath
Roscoe, R. Esq.
Robertson, Archibald, M.D.
Ruan, Dr.
Robinson, William, Esq.
Scott, John, M.D. Physician to St. Thomas's Hospital.
Stanley; Edward, Esq. Assistant Surgeon and Demonstrator of
    Anatomy at St. Bartholomew's Hospital, Lincoln's-
    Inn-fields.
Strang, John, Esq. Bridport, Dorsetshire
Scarpa Antonio, F.R.S. Professor of Anatomy in the University
    of Pavia
Stewart, William, Esq. New South Wales
Street, —— Esq. London Hospital
Stewart, John, Esq.
Soden, J. S. Esq. Surgeon to the City Infirmary, &c. Bath
Simpson, Dr. Malton, Yorkshire
Simpson, James A. M.D.
Surr, John, Esq. Aldersgate-street, (since dead)
Stolerforth, —— Esq. Bolton-street, Piccadilly
Skrimshire, Dr.
Stokes, J. M.D. Chesterfield
Shaw, John, Esq. Demonstrator of Anatomy, at Great Wind-
    mill-street, Albany, Piccadilly
Spry, I. H. Esq. Surgeon to the East India Company, Charter-
    house-square
Sealy, James, A.B. Dublin
Sullivan, James, M.D. Dublin
Stock, William, M.D. Dublin
Stromeyer, Professor, Gottingen
Sankey, W. S. Esq. Dublin
Sainsbury, William, M.D. Corsham, Wilts
Smith and Kinnear, Kingston, Jamaica, 6 copies
Smith, Dr. Great Russell-street, Bloomsbury
Smith, Edward, Esq. Dursley, Gloucestershire
Scott, Samuel, Esq. 6th Regiment Dragoon Guards
Sackowitch, Mr. St. Petersburgh
Salmon, Frederick, Esq. House Surgeon, St. Bartholomew's
    Hospital
Stowe, William, Esq. Buckingham
Shepherd, E. Esq. St. Bartholomew's Hospital
Stocker, T. Esq, Sidmouth, Devon
Tartini, Mr. Florence
Travers, Benjamin, Esq. Surgeon to St. Thomas's Hospital,
    New Broad-street

Tyrrell, Frederick, Esq. Surgeon to the London Infirmary, for
        Diseases of the Eyes, Church-passage, Cateaton-street.
Todd, —— Esq. Dublin
Thompson, Henry, Esq. Kensington
Thorndyke, —— Esq. Boston, United States
Teppetts, I. B. Esq. Spital-square
Teppetts, R. Esq. Dartford
Tweedie, Alexander, M. D. Ely-place
Thomson, Alexander, Esq.
Turner. —— Esq. Manchester
Troughton, N. Esq. Coventry
Vade, J. K. Esq. Cornhill
Uwins, David, M.D. one of the Physicians to the City Dispen-
        sary, Bedford-row
Velo, The Count de, Venice
Van Oven, Barnard, Esq. Fenchurch-buildings
Wallace, William, Esq. Dublin
Ware, John, Esq. Bridge-street, Blackfriars
Wardrop, James, Esq. F.R.S.E. Charles-street, St. James's-sq.
Warburton, John, M.D. Clifford-street, Bond-street
Watson, John, Esq. Carlisle-street, Soho-square
Watson, —— Esq. Berners-street
Weatherhead, J. H. M.D. Upper Montague-street, Montague-
        square
Webb, John, Esq. Alcester
Wellbank, Richard Esq. Chancery-lane
Wells, C. D. Esq. Morpeth
Wheeler, Lowe, Esq. House Surgeon at St. Bartholomew's
        Hospital
Wheeler, Charles West, Esq. Apothecary to St. Bartholomew's
        Hospital
Wheeler, Thomas Lowe, Esq. 61, Gracechurch-street
Wight, Dr. Edinburgh
Wilson, W. J. Esq. Manchester
Wight Dr. Madras Establishment
Wilson, Rev. Mr. Tobago
Williamson, Dr.
Wilmer, J. Esq. Infirmary, Derby
Willis, Dr. Cheltenham
Windsor, John, Esq. Manchester
Wylie, Sir James, M.D. Physician Extraordinary to the Em-
        peror of Russia, St. Petersburgh
Yonge, James, M.D. Harley-street, Cavendish-square
Young, George Frederick, Esq.
Young, Dr. Tobago
Young, —— Esq. Lambeth